**DEPARTMENT OF THE INTERIOR**

**Fish and Wildlife Service**

**50 CFR Part 17**

**[Docket No. FWS-R4-ES-2019-0068; FF09E21000 FXES1111090FEDR 234]**

**RIN 1018-BE12**

# Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Florida Bristle Fern

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Final rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), designate critical habitat for the Florida bristle fern (*Trichomanes punctatum* ssp. *floridanum*) under the Endangered Species Act of 1973 (Act), as amended. In total, approximately 1,698 hectares (ha) (4,195 acres (ac)) fall within 10 units of critical habitat in Miami-Dade and Sumter Counties, Florida. This rule extends the Act's protections to the Florida bristle fern's designated critical habitat.

**DATES:** This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION].

**ADDRESSES:** This final rule is available on the internet at *https://www.regulations.gov*. Comments and materials we received, as well as supporting documentation we used in preparing this rule, are available for public inspection at *https://www.regulations.gov*. All of the comments, materials, and documentation that we considered in this rulemaking are available by appointment, during normal business hours, at: U.S. Fish and Wildlife Service, Florida Ecological Services Field Office, 1339 20th Street, Vero Beach, FL 32960; telephone 772–562–3909.

The coordinates or plot points or both from which the maps are generated are included in the decision file for this critical habitat designation and are available at

*https://www.regulations.gov* at Docket No. FWS-R4-ES-2019-0068, at *https://www.fws.gov/office/florida-ecological-services/library*, and at the Florida Ecological Services Field Office at the Vero Beach address provided above. Any additional tools or supporting information that we developed for this critical habitat designation will be available at the U.S. Fish and Wildlife Service website and Field Office identified above and at *https://www.regulations.gov*.

**FOR FURTHER INFORMATION CONTACT:** Lourdes Mena, Classification and Recovery Division Manager, U.S. Fish and Wildlife Service, Florida Ecological Services Field Office, 7915 Baymeadows Way, Suite 200, Jacksonville, FL 32256; by telephone 904-731-3134; or by facsimile 904–731–3045. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

**SUPPLEMENTARY INFORMATION:**

**Executive Summary**

*Why we need to publish a rule.* Under section 4(a)(3) of the Act, if we determine that a species is an endangered or threatened species, we must designate critical habitat to the maximum extent prudent and determinable. We published a final rule to list the Florida bristle fern as an endangered species on October 6, 2015 (80 FR 60440). Designations of critical habitat can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process.

*What this document does.* This rule finalizes a designation of critical habitat for the Florida bristle fern (*Trichomanes punctatum* ssp. *floridanum*) consisting of 10 units comprising approximately 1,698 ha (4,195 ac) in Miami-Dade and Sumter Counties, Florida.

*The basis for our action.* Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary) to designate critical habitat concurrent with listing to the maximum extent prudent and determinable. Section 3(5)(A) of the Act defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4(b)(2) of the Act states that the Secretary must make the designation of critical habitat on the basis of the best available scientific data and after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if she determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless she determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species.

*Economic analysis*. In accordance with section 4(b)(2) of the Act, we prepared an economic analysis of the impacts of designating critical habitat for the Florida bristle fern. We published the announcement of, and solicited public comments on, the draft economic analysis (DEA; 85 FR 10371, February 24, 2020). Because we received no comments on the DEA, we adopted the DEA as a final version. The final economic analysis (IEc 2020, entire) is available at *https://www.regulations.gov* under Docket No. FWS-R4-ES-2019-0068.

*Peer review and public comment.* In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of actions under the Act, we sought the expert opinions of independent specialists with scientific expertise that included familiarity with the species, the geographic regions in which the species occurs, and conservation biology

principles. The purpose of peer review is to ensure that our designation is based on scientifically sound data and analyses. We invited these peer reviewers to comment on our specific assumptions and conclusions in the critical habitat proposal during the public comment period for the February 24, 2020, proposed rule. We received responses from two peer reviewers on our technical assumptions and analysis, and on whether or not we used the best scientific data available. These peer reviewers generally concurred with our methods and conclusions, and they provided additional information, clarifications, and suggestions to improve this final rule. Information we received from peer review is incorporated into this final designation of critical habitat. We also considered all comments and information we received from the public during the comment period for the proposed designation of critical habitat for the Florida bristle fern and the associated DEA (85 FR 10371; February 24, 2020).

**Previous Federal Actions**

On November 9, 2009, the Florida bristle fern was first recognized as a candidate for possible future listing (74 FR 57804). On October 9, 2014, we proposed to list the Florida bristle fern as an endangered species (79 FR 61136). On October 6, 2015, we finalized the listing for the subspecies as an endangered species (80 FR 60440). On February 24, 2020, we proposed to designate critical habitat for the Florida bristle fern (85 FR 10371). Please refer to the October 9, 2014 (79 FR 61136), proposed listing rule for a more detailed description of Federal actions regarding the Florida bristle fern.

**Summary of Changes from the Proposed Rule**

This final rule incorporates changes to our proposed rule (85 FR 10371; February 24, 2020) based on the comments and information we received. As a result, the final designation of critical habitat reflects the following changes from the February 24, 2020, proposed rule (85 FR 10371):

1. We revised Matheson Hammock (SF 1) to include additional areas as critical habitat. This unit was originally proposed as 16 ha (39 ac) and now consists of approximately 22 ha (55 ac), which is an increase of approximately 41 percent for this unoccupied unit.

2. We revised Snapper Creek (SF 2) to include additional areas as critical habitat. This unit was originally proposed as 3 ha (8 ac) and now consists of approximately 6 ha (15 ac), which is an increase of approximately 88 percent for this unoccupied unit.

3. We added Charles Deering Estate Hammock as a new unoccupied critical habitat unit (SF 3). This unit consists of approximately 43 ha (106 ac), which is an increase of approximately 3 percent of the total proposed critical habitat acreage.

4. We revised Castellow and Ross Hammocks (proposed SF 3; now SF 4) to include additional areas as critical habitat. This unit was originally proposed as 38 ha (93 ac) and now consists of approximately 56 ha (139 ac), which is an increase of approximately 48 percent for this occupied unit.

5. We revised the unit number for Silver Palm Hammock (proposed SF 4; now SF 5).

6. We revised Hattie Bauer Hammock (proposed SF 5; now SF 6) to include additional areas as critical habitat. This unit was originally proposed as 3 ha (8 ac) and now consists of approximately 6 ha (16 ac), which is an increase of approximately 100 percent for this occupied unit.

7. We revised Fuchs and Meissner Hammocks (proposed SF 6; now SF 7) to remove 1.6 ha (4 ac) that do not contain the essential physical or biological features for the Florida bristle fern and to include an additional 0.4 ha (1 ac) as critical habitat. This unit now consists of approximately 10 ha (25 ac), which is a decrease of approximately 8 percent of the proposed area for this occupied unit.

8. We revised the unit number for Royal Palm Hammock (proposed SF 7; now SF 8), and we updated the acreage for this unit. The proposed rule reported the size of the unit as 60 ha

(148 ac); in this rule, we update the size of the unit to 61 ha (150 ac). The change is due to using updated parcel data from Miami-Dade County (2021 data versus 2017 data).

9. We updated the coordinates or plot points from which the maps were generated. The information is available at *https://www.regulations.gov* under Docket No. FWS-R4-ES-2019-0068, at *https://www.fws.gov/office/florida-ecological-services/library*, and from the Florida Ecological Services Field Office, Vero Beach.

10. Under **Physical or Biological Features Essential to the Conservation of the Species** in this rule:

- We corrected the critical habitat unit name and occupancy status where a long-term microclimate study occurred at Deering's Cutler Slough from Deering Snapper Creek to Charles Deering Estate Hammock.
- We changed "underground" to "horizontal" when describing rhizomal stem growth.
- In the description of nonnative, invasive plants that impact Florida bristle fern, we replaced love vine (*Cassytha filiformis*) with the most common aroid vines in the Miami-Dade County critical habitat units (golden pothos (*Epipremnum pinnatum* cv. *aureum*) and arrowhead vine (*Syngonium podophyllum*)).
- We added that invasive vines have become an increasing threat to hammocks in south Florida and can result in canopy collapse during hurricanes or other high wind events.

11. Under **Special Management Considerations or Protection** in this rule:

- We described the competitive interaction between native bryophytes and Florida bristle fern.
- We added language to describe that most of the critical habitat units are open to public access and that Florida bristle fern may be at risk of collection, damage from people climbing on them, and impacts to microclimate due to installation and improvements of trails.

- We added language discussing the potential short- to mid-term benefits of sea level rise to the fern through lifting a freshwater lens into previously drained areas or areas experiencing a lowered water table, which may restore or preserve a favorable microclimate for the subspecies.

12. We added the potential presence of gametophytes, the cryptic reproductive stage of the fern, at historically occupied areas to our reasoning for designating unoccupied critical habitat units in this rule.

13. In the description of each critical habitat unit in this rule, we removed language suggesting prescribed burning as an appropriate management tool for Florida bristle fern conservation.

**Summary of Comments and Recommendations**

Our proposed rule to designate critical habitat for the Florida bristle fern (85 FR 10371; February 24, 2020) opened a 60-day comment period on the proposed action and associated DEA, ending April 24, 2020. We requested that all interested parties submit written comments and we also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. Newspaper notices inviting general public comment were published in the Miami Herald and Orlando Sentinel on March 4, 2020. During the comment period, we received two comment letters from peer reviewers directly addressing the proposed critical habitat designation and nine public comments. We did not receive any requests for a public hearing, and we did not receive any comments on the DEA. A majority of the comments supported the designation; none opposed the designation; and the letters from the peer reviewers included suggestions on how we could refine or improve the designation. We received some comments outside the scope of the designation (including information on recovery strategies) and, although we noted these comments, we only respond to comments herein that were within the scope of our action to

designate critical habitat. All substantive information provided to us during the comment period has been incorporated directly into this final rule or is addressed below.

*Peer Reviewer Comments*

*(1) Comment:* Both peer reviewers suggested adding the following areas in Miami-Dade County to the critical habitat designation: Monkey Jungle (also known as Cox Hammock), Smathers Four Fillies Farm (contiguous to and formerly part of Snapper Creek Hammock), the Charles Deering Estate Hammock (also known as Addison Hammock), and Timms Hammock (within Camp Owaissa Bauer). The reviewers noted that these areas contain one or more of the physical or biological features defined in the proposed critical habitat rule and that Monkey Jungle, Smathers Four Fillies Farm, and the Charles Deering Estate Hammock contained documented historical records of the Florida bristle fern. Timms Hammock (within Camp Owaissa Bauer) was not known to have historical records but was noted to have excellent habitat for the Florida bristle fern and is close to another occupied unit (Hattie Bauer Hammock).

*Our Response:* All these areas, with the exception of Smathers Four Fillies Farm, were included in the request for information in the proposed critical habitat rule. We asked for information regarding their occupancy status and habitat suitability, whether physical or biological features essential to the conservation of the subspecies are present, and whether they should be included in the designation and why. After re-examining historical records, meeting with land managers, and re-analyzing GIS data, we added Smathers Four Fillies Farm and Charles Deering Estate Hammock to the critical habitat designation as described in **Summary of Changes from the Proposed Rule**, above, because we have determined they are essential to the conservation of the species and meet the regulatory criteria. Below, we describe our response for not including Monkey Jungle and Timms Hammock to the critical habitat designation.

*Monkey Jungle*—The documented occurrence from Monkey Jungle (in 1989 by A. Cressler; Cressler 1991, entire) was unconfirmed due to no collections or voucher records. Monkey Jungle is privately owned, and researchers have not been permitted access to survey the

entire area for Florida bristle fern (Adimey 2013, pers. comm.; van der Heiden 2013a, pers. comm.; Possley 2021, pers. comm.), so occupancy by the fern is unknown, although it was not found in the areas that were surveyed. Even though this area may have one or more of the physical or biological features essential to the conservation of the Florida bristle fern, the area has a high number of invasive plant species (Adimey 2013, pers. comm.; Possley 2020, pers. comm.), disturbance due to development and management of the park, and potential herbivory by monkeys (Adimey 2013, pers. comm.). Based on these factors, it is unlikely that this area was occupied by the Florida bristle fern at the time of listing or that it is essential for the conservation of the subspecies. Therefore, we are not adding Monkey Jungle as unoccupied critical habitat to the critical habitat designation.

*Timms Hammock/Camp Owaissa Bauer*—Timms Hammock is located within Camp Owaissa Bauer, which is owned and managed by Miami-Dade County. Even though this area contains some or all of the physical or biological features essential to the conservation of the Florida bristle fern, it does not contain historical or known extant populations of Florida bristle fern nor is it contiguous to currently or historically occupied areas. Because our methodology for determining which unoccupied areas were essential for the conservation of the species excludes areas that do not have historical records, regardless of habitat suitability (see **Criteria Used to Identify Critical Habitat**, below), Timms Hammock/Camp Owaissa Bauer does not meet the statutory requirement that unoccupied critical habitat be essential for the conservation of the species and is not included in the critical habitat designation.

*(2) Comment:* One peer reviewer suggested expanding the size of five units in Miami-Dade County (Matheson Hammock, Snapper Creek, Castellow and Ross Hammocks, Hattie Bauer Hammock, and Fuchs and Meissner Hammocks) to include contiguous pieces of hammock that seemed to be excluded despite meeting all habitat criteria. The reviewer noted that many of these parcels are under active forest management by public and private entities (private through a property tax incentive program and/or a local regulatory requirement). All parcels that

meet forest and substrate characteristics and that are contiguous to the proposed critical habitat units were considered by the reviewer to provide habitat critical to the survival of Florida bristle fern.

*Our Response:* To clarify which parcels the reviewer was suggesting adding to the units, we held several discussions with the peer reviewer and the landowners or managers of each parcel to get more information about the suitability of each parcel. We only considered adding parcels to proposed units that met the criteria for designating occupied or unoccupied critical habitat units (see **Criteria Used to Identify Critical Habitat**, below). After re-examining historical records, meeting with land managers, and re-analyzing GIS data, we added contiguous hammock parcels to Unit SF 1 (Matheson Hammock), Unit SF 2 (Snapper Creek), Unit SF 3 (now SF 4; Castellow and Ross Hammocks), Unit SF 5 (now SF 6; Hattie Bauer Hammock), and Unit SF 6 (now SF 7; Fuchs and Meissner Hammocks) as described in **Summary of Changes from the Proposed Rule**, above, because we have determined they meet the statutory and regulatory criteria for critical habitat.

*(3) Comment:* One peer reviewer suggested adding the following areas to the critical habitat designation: Camp Redlands, Bill Sadowski Park, Whispering Pines Hammock, Black Creek Forest, Harden Hammock, Silver Palm Groves, Camp Owaissa Bauer, Lucille Hammock, Loveland Hammock, and Holiday Hammock in Miami-Dade County. The reviewer noted that these areas contain one or more of the physical or biological features essential to the conservation of Florida bristle fern as defined in the proposed critical habitat rule. The reviewer analyzed relative elevation, presence of limestone outcroppings, presence of surrogate ferns (*Asplenium verecundum* and *Tectaria fimbriata*), canopy cover, and hydrology connection when suggesting areas to add to the critical habitat designation. The reviewer noted that identifying rare fern presence as a surrogate for habitat appropriateness was similar to how the proposed listing considered potential habitat in central Florida.

*Our Response:* While these areas contain one or more of the physical or biological features essential to the conservation of the Florida bristle fern, they do not contain historical or known extant populations of Florida bristle fern nor are they contiguous to currently or historically occupied areas. Also, the proposed rule did not consider rare fern presence as a surrogate for habitat appropriateness when designating critical habitat units in central or south Florida. Because our methodology for designating unoccupied critical habitat excludes any areas that do not have historical records, regardless of habitat suitability (see **Criteria Used to Identify Critical Habitat**, below), these areas do not meet our criteria for determining that unoccupied areas are essential for the conservation of Florida bristle fern and are not included in the final critical habitat designation.

*Comments From States*

Section 4(b)(5)(A)(ii) of the Act requires the Service to give actual notice of any designation of lands that are considered to be critical habitat to the appropriate agency of each State in which the species is believed to occur and invite each such agency to comment on the proposed regulation. Section 4(i) of the Act states that the Secretary shall submit to the State agency a written justification for her failure to adopt regulations consistent with the agency's comments or petition. We did not receive any written comments from the State of Florida on the proposed critical habitat designation for the Florida bristle fern.

*Public Comments*

*(4) Comment:* One commenter urged the Service to add more clear reasoning behind our decision for each unoccupied area included.

*Our Response:* We have added language to the rule to provide more clarity for each unoccupied area. This information further supports including currently unoccupied, but historically occupied, areas to the critical habitat designation. Further information about our rationale for why unoccupied critical habitat is needed for the subspecies can be found in *Areas*

*Outside the Geographic Area Occupied at the Time of Listing*, below. In addition, information is provided in each unit description below with the rationale for each unit.

**Background**

Section 4 of the Act (16 U.S.C. 1533) and the implementing regulations in title 50 of the Code of Federal Regulations set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened species, and designating critical habitat for threatened and endangered species. In 2019, jointly with the National Marine Fisheries Service, the Service issued final rules that revised the regulations in 50 CFR parts 17 and 424 regarding how we add, remove, and reclassify threatened and endangered species and the criteria for designating listed species' critical habitat (84 FR 45020 and 84 FR 44752; August 27, 2019). At the same time the Service also issued final regulations that, for species listed as threatened species after September 26, 2019, eliminated the Service's general protective regulations automatically applying to threatened species the prohibitions that section 9 of the Act applies to endangered species (collectively, the 2019 regulations).

As with the proposed rule, we are applying the 2019 regulations for this final rule because the 2019 regulations are the governing law just as they were when we completed the proposed rule. Although there was a period in the interim—between July 5, 2022, and September 21, 2022—when the 2019 regulations became vacated and the pre-2019 regulations therefore governed, the 2019 regulations are now in effect and govern listing and critical habitat decisions (*see Center for Biological Diversity v. Haaland*, No. 4:19-cv-05206-JST, Doc. 168 (N.D. Cal. July 5, 2022) (CBD v. Haaland) (vacating the 2019 regulations and thereby reinstating the pre-2019 regulations)); *In re: Cattlemen's Ass'n*, No. 22-70194 (9th Cir. Sept. 21, 2022) (staying the district court's order vacating the 2019 regulations until the district court resolved a pending motion to amend the order); *Center for Biological Diversity v. Haaland*, No. 4:19-cv-5206-JST, Doc. Nos. 197, 198 (N.D. Cal. Nov. 16, 2022) (granting plaintiffs' motion to amend July 5, 2022 order and granting government's motion for remand without vacatur).

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (*i.e.*, range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (*e.g.*, migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a

landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the Federal agency would be required to consult with the Service under section 7(a)(2) of the Act. However, even if the Service were to conclude that the proposed activity would result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement "reasonable and prudent alternatives" to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat).

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. The implementing regulations at 50 CFR 424.12(b)(2) further delineate unoccupied critical habitat by setting out three specific parameters: (1) when designating critical habitat, the Secretary will first evaluate areas occupied by the species; (2) the Secretary will only consider unoccupied areas to be essential where a critical habitat designation limited to geographical areas occupied by the species would be inadequate to ensure the conservation of the species; and (3) for an unoccupied area to be considered essential, the Secretary must determine that there is a reasonable certainty both that the area will contribute to the conservation of the species and that the area contains one or more of those physical or biological features essential to the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best

scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the *Federal Register* on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed journals; conservation plans developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in section 9 of the Act. Federally funded or permitted projects affecting listed species outside their designated critical

habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

**Physical or Biological Features Essential to the Conservation of the Species**

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas we will designate as critical habitat from within the geographical area occupied by the species at the time of listing, we consider the physical or biological features that are essential to the conservation of the species and that may require special management considerations or protection. The regulations at 50 CFR 424.02 define "physical or biological features essential to the conservation of the species" as the features that occur in specific areas and that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity. For example, physical features essential to the conservation of the species might include gravel of a particular size required for spawning, alkaline soil for seed germination, protective cover for migration, or susceptibility to flooding or fire that maintains necessary early-successional habitat characteristics. Biological features might include prey species, forage grasses, specific kinds or ages of trees for roosting or nesting, symbiotic fungi, or a particular level of nonnative species consistent with conservation needs of the listed species. The features may also be combinations of habitat characteristics and may encompass the relationship between characteristics or the

necessary amount of a characteristic essential to support the life history of the species.

In considering whether features are essential to the conservation of the species, we may consider an appropriate quality, quantity, and spatial and temporal arrangement of habitat characteristics in the context of the life-history needs, condition, and status of the species. These characteristics include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing (or development) of offspring; and habitats that are protected from disturbance.

*Space for Individual and Population Growth and for Normal Behavior*

Florida bristle fern occurs exclusively in upland hardwood forest hammock habitats that support the climate (stable humidity and temperature), hydrology, canopy cover, and limestone substrates necessary for the subspecies to persist, grow, and reproduce. Upland hardwood forests consist of a mosaic of natural hammock and hardwood communities primarily characterized as mesic, hydric, and rockland hammocks, or intermixed hammock strands, with associated transitional wetland matrix/hydric and upland communities (Florida Natural Areas Inventory [Inventory] 2010, pp. 16–28). The hammock habitats occur within and as part of larger matrices of hydric or pine rockland communities (Inventory 2010, pp. 16–28). Detailed descriptions of these natural communities can be found in Natural Communities of Florida (Inventory 2010, pp. 16–28) and in the final listing rule for Florida bristle fern (80 FR 60440; October 6, 2015). Natural communities include both wetland and upland communities having intact vegetation (*i.e.*, not cleared).

The current range of Florida bristle fern includes two metapopulations, one in south Florida (Miami-Dade County) and one in central Florida (Sumter County). The south Florida metapopulation is currently composed of four known populations, and the central Florida metapopulation is composed of two known populations. The south Florida populations of Florida bristle fern occur in communities characterized by primarily rockland hammock or closed

tropical hardwood hammocks occurring within a larger matrix of pine rockland on the Miami Rock Ridge. In central Florida, the populations of the subspecies occur in predominantly mesic hammocks situated in a mosaic of hydric hammock and mixed wetland hardwoods. These internal or inter-mixed strands of hammock within the forested communities are characterized by fairly dense to extremely dense canopy cover, which prevents drastic changes in temperature and humidity and the desiccation of the fern from direct sunlight and drying winds.

The matrix of landscapes associated with the hammocks or the intermixed strands of these communities support the suitable conditions necessary for the growth and reproduction of Florida bristle fern. Suitable habitat quality and size are necessary to ensure the maintenance of the microclimate conditions (stable temperature, high humidity, moisture, canopy shade, and shelter) essential to the subspecies' survival and conservation. These combined factors establish the fern's microclimate: (a) The level of protection/exposure the fern experiences given its location in a solution hole (a limestone solution feature; in the Miami Rock Ridge, they consist of steep-sided pits, varying in size, formed by dissolution of subsurface limestone followed by a collapse above (Snyder *et al*. 1990, p. 236)) or on an exposed boulder; (b) the quality of the solution hole or exposed boulder substrate; and (c) the amount of canopy cover. The surrounding vegetation is a key component in producing and supporting this microclimate. There are differences in vegetation and substrate characteristics between the two geographically distant metapopulations that can account for differences in the amount of habitat needed to support the fern. For example, Florida bristle fern in south Florida occurs in a tropical climate and attaches to the interior walls of well-protected and insulated solution holes. By comparison, in central Florida, Florida bristle fern occurs in a more temperate climate and is found more exposed by attaching to a substrate that is above the surface. The size and quality of the intact habitat surrounding the exposed substrate can play a greater role in providing and supporting the stable, shaded, and wind-protected microclimate conditions the fern needs. Therefore, the microclimate conditions (stable temperature, high humidity, canopy shade, and shelter) have the potential to be

maintained (and the plant is able to persist) within smaller areas in south Florida than those needed to support the microclimate conditions in central Florida. For both metapopulations, intact upland hardwood forest and associated hammock habitat is an essential feature to the conservation of this subspecies, and sufficient habitat is needed to ensure the maintenance of the fern's microclimate and life processes (growth, dispersal).

Therefore, we identify upland hardwood forest hammock habitats of sufficient quality and size to sustain the necessary microclimate and life processes for Florida bristle fern to be a physical or biological feature essential to the conservation of this subspecies.

*Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements*

Substrate and Soils

Florida bristle fern is generally epipetric (grows on rocks) or epiphytic (grows non-parasitically upon another plant). In combination with the habitat characteristics discussed above, the subspecies requires exposed limestone substrate to provide suitable growing conditions for anchoring, nutrients, pH, and proper drainage (van der Heiden 2016, p. 1). Florida bristle fern prefers substrate having exposed oolitic (composed of minute, rounded concretions resembling fish eggs) limestone or limestone solution features (solution holes) filled with a thin layer of highly organic soil and standing water for part or all of the year. The limestone substrate occurs primarily as solution holes in south Florida and exposed limestone boulders in central Florida.

In south Florida, Florida bristle fern is currently found growing in rocky outcrops of rockland hammocks, in oolitic limestone solution holes, and, occasionally, on tree roots in limestone-surrounded areas (Nauman 1986, p. 181; Possley 2013a, pers. comm.). These rockland habitats are outcrops primarily composed of marine limestone representing the distinct geological formation of the Miami Rock Ridge, a feature that encompasses a broad area from Miami to Homestead, Florida, and narrows westward through the Long Pine Key area of Everglades National Park (Snyder *et al*. 1990, pp. 233–234). The limestone solution holes are considered specialized habitat within these hammock areas that host Florida bristle fern (Snyder

*et al*.1990, p. 247). The solution-hole features that dominate the rock surface in the Miami Rock Ridge are steep-sided pits formed by dissolution of subsurface limestone followed by the eventual collapse of the surface above (Snyder *et al*. 1990, p. 236). The limestone solution holes often have complex internal topography and vary in size and depth, from shallow holes a few centimeters deep to those that are several meters in size and up to several meters deep (Snyder *et al*. 1990, p. 238; Kobza *et al*. 2004, p. 154). The bottoms of most solution holes are filled with organic soils, while deeper solution holes penetrate the water table and have (at least historically) standing water for part of the year (Snyder *et al*. 1990, pp. 236–237; Rehage *et al*. 2014, pp. S160–S161). A direct relationship has been found between the length of time a solution hole contains water (hydroperiod length) and the habitat quality (vegetative cover) of the solution hole (Rehage *et al*. 2014, p. S161).

Oolitic limestone occurs in south Florida (and other locations in the world), but it does not occur in central Florida. In central Florida, Florida bristle fern resides on limestone substrate in high-humidity hammocks (van der Heiden 2013a, pers. comm.; van der Heiden 2016, p. 1). In the mesic hammocks on the Jumper Creek Tract of the Withlacoochee State Forest, the subspecies has been observed growing on exposed limestone rocks as small as 0.1 meters (m) (0.3 feet (ft)) tall as well as on larger boulders with tall, horizontal faces, and occurs alongside numerous other plant species, including rare State-listed species (*e.g*., hemlock spleenwort (*Asplenium cristatum*) and widespread polypody (*Pecluma dispersa*)) (van der Heiden 2013b, pers. comm.; van der Heiden and Johnson 2014, pp. 7–8). Rock outcrops may also provide suitable substrate where the underlying Ocala limestone (a geologic formation of exposed limestone near Ocala, Florida) is near the surface.

Therefore, based on the information above, we identify exposed substrate derived from oolitic limestone, Ocala limestone, or exposed limestone boulders, which provide anchoring and nutritional requirements, to be a physical or biological feature essential to the conservation of Florida bristle fern.

Climate and Hydrology

Florida bristle fern is considered strongly hygrophilous (*i.e.*, growing or adapted to damp or wet conditions) and is generally perceived as restricted to constantly humid microhabitat (Krömer and Kessler 2006, p. 57; Proctor 2012, pp. 1024–1025). Features that allow for proper ecosystem functionality and a suitable microhabitat required for the growth and reproduction of the subspecies include a canopy cover of suitable density (*i.e.*, average canopy closure more than 75 percent) and humidity and moisture of sufficient levels and stability (on average, above approximately 90 percent relative humidity) (van der Heiden and Johnson 2014, p. 8; Possley 2015, pers. comm.; van der Heiden 2016, p. 18).

The relationship between moist habitats and the *Hymenophyllaceae* Family of ferns (filmy ferns), to which the *Trichomanes* species belongs, has been long observed and documented (Shreve 1911, pp. 187, 189; Proctor 2003, entire; Proctor 2012, p. 1024). In a tropical rain forest system, the diversity and number of filmy fern species is shown to have a direct relation to the air moisture (relative humidity) (Gehrig-Downie *et al*. 2012; pp. 40–42). While not in the same fern Family as the Florida bristle fern, a study of the rare temperate woodland fern, Braun's hollyfern (*Polystichum braunii*), found air humidity to be a key factor in species health, with stronger plant productivity occurring in higher humidity levels (Schwerbrock and Leuschner 2016, p. 5). Although a minimum suitable humidity level, or threshold, for Florida bristle fern has not been quantified for either metapopulation of the subspecies, information from field studies indicates conditions of high and stable relative humidity are essential to the subspecies. Minor drops in ambient humidity may limit reproduction of the subspecies and can negatively impact overall health of the existing metapopulations, as well as inhibit the growth of new plants, impacting long-term viability (Possley 2013b, pers. comm.; van der Heiden 2013a, pers. comm.). This relationship was observed in Sumter County, where small drops (approximately 1 to 2 percent) in relative humidity associated with colder weather resulted in observed declines in the health of some clusters of Florida bristle fern within the local

population (van der Heiden and Johnson 2014, p. 9).

The average relative humidity for hammocks in Sumter County remained near 95 percent for the duration of a September–November 2013 study (van der Heiden and Johnson 2014, pp. 8–9). Further, the minimum and maximum monthly average relative humidity from September 2013 to March 2015 for the two central Florida hammocks supporting Florida bristle fern were 88 and 99 percent and 89 and 100 percent, respectively (van der Heiden 2016, p. 18). The lowest monthly average relative humidity in each of the hammocks was 65 and 69 percent, respectively. In comparison, the minimum and maximum monthly average relative humidity documented outside of the hammock (from June 2014 to March 2015) was 68 and 93 percent, respectively, with a low monthly relative humidity of 51 percent. In summary, similar and consistently high average humidity values occurred between and within the two hammocks supporting the subspecies, and consistently higher relative humidity values were recorded in the hammocks compared to outside the hammocks.

Likewise, in south Florida, 8 years of data-log monitoring of Deering's Cutler Slough (the location of a known extirpated population, Charles Deering Estate Hammock, of Florida bristle fern) recorded an average of 90 percent relative humidity occurring within a solution hole compared to the 84 percent average relative humidity documented in the slough outside of the solution hole during the same time period (Possley *et al.* 2009, pp. 4–6; Possley 2015, pers. comm.).

The hammock environments are high or slightly elevated grounds that do not regularly flood but are dependent on a high water table to keep humidity levels high (Inventory 2010, pp. 19–28). The subspecies is affected by humidity at two spatial scales:  the larger hammock community-scale and the smaller substrate (boulder/solution hole) microclimate-scale (van der Heiden and Johnson 2014, pp. 9–10). Moisture (precipitation and low evaporation) and humidity levels are likely factors limiting the occurrence of Florida bristle fern (Shreve 1911, p. 189; Proctor 2003, p. 726; Gehrig-Downie *et al*. 2012, p. 40). The high humidity levels discussed

above and stable temperatures, moisture, and shading (cover) are all features considered essential to the subspecies and produced by the combination of:

(1) Solution hole or boulder microclimate;

(2) Organic, moisture-retaining soils (high soil moisture conditions);

(3) Hydrology of the surrounding or adjacent wetlands; and

(4) Protective shelter of the surrounding habitat minimizing effects from drying winds and/solar radiation.

Solution holes provide the limestone substrate and produce the necessary humid and moist microclimate needed by the subspecies in south Florida. In central Florida, the fern occurs in the more northerly portion of the hammocks and northern aspect of the limestone boulders, obtaining greater shading and moist conditions compared to the sunnier and drier south-facing portions of the hammocks and sides of boulders (van der Heiden and Johnson 2014, pp. 7, 31). Variances within hammocks, such as slight structural differences or proximity to water, also play an important part in where suitable microhabitat occurs in the hammock habitats. Intact hydrology and the connectivity of substrates to surface water and streams may play a role in spore and vegetative fragment dispersal for the subspecies (we provide more detail about this below, under *Sites for Reproduction, Germination, and Spore Production and Dispersal*). Soils associated with the hammock ecosystems consist of sands mixed with organic matter, which produce better drained soils than soils of surrounding or adjacent wetland communities. Soils in habitats of extant Florida bristle fern populations in south Florida consist of an uneven layer of highly organic soil and moderately well-drained, sandy, and very shallow soils (classified as Matecumbe muck). Soils in habitats of the central Florida metapopulation are predominantly sand and Okeelanta muck (80 FR 60440; October 6, 2015). For both metapopulations, a relatively high soil-moisture content and high humidity are maintained by dense litter accumulation, ground cover, and heavy shade produced by the dense canopy (Service 1999, pp. 3–99).

In addition, the protected hammock habitats are slightly higher in elevation than the surrounding habitat, which combined with the limestone substrate, leaf litter, and sandy soils, create a hydrology that differs from lower elevation habitats. It is this combination of hammock ecosystem characteristics (*i.e.*, closed canopy, limestone substrate, humid climate, higher elevation) occurring in hardwood forested upland communities as described earlier that are essential to the conservation of the subspecies.

Therefore, based on the information above, we identify a constantly humid microhabitat climate consisting of dense canopy cover, moisture, stable high temperature, and stable monthly average relative humidity of 90 percent or higher, with intact hydrology within hammocks and the surrounding and adjacent wetland communities, to be a physical or biological feature essential to the conservation of Florida bristle fern.

Cover and Shelter

Florida bristle fern occurs exclusively in hardwood hammock habitats having dense canopy, which provides shade necessary to support suitable microhabitat for the subspecies to persist, grow, and reproduce. In south Florida (Miami-Dade County), the extant populations of Florida bristle fern occur in communities classified as rockland hammocks on the Miami Rock Ridge. In central Florida (Sumter County), the extant populations of the subspecies occur in mesic hammocks, often situated in a mosaic of natural communities including hydric hammock and mixed wetland hardwoods.

The dense canopies of the hammock systems (including rockland and mesic hammocks) contribute to maintaining suitable temperature and humidity levels within this microclimate. The dense canopies found in these habitats minimize temperature fluctuations by reducing soil warming during the day and heat loss at night, thereby helping to prevent frost damage to hammock interiors (Inventory 2010, p. 25). In areas with greater temperature variations, as in central Florida, these benefits afforded by the dense canopy of both the mesic hammock and surrounding habitat combined are important to maintaining suitable conditions for Florida bristle

fern. The rounded canopy profile of hammocks helps maintain mesic (moist) conditions by deflecting winds, thereby limiting desiccation (extreme dryness) during dry periods and reducing interior storm damage (Inventory 2010, p. 25). Changes in the canopy can impact humidity and evaporation rates, as well as the amount of light available to the understory. Both known extant metapopulations of Florida bristle fern live in dense canopy habitat, with shady conditions, which may be obligatory due to the poikilohydric (*i.e.*, possess no mechanism to prevent desiccation) nature of some fern species including the Florida bristle fern (Krömer and Kessler 2006, p. 57).

While the proper amount of canopy is critical to the persistence of Florida bristle fern, the lower limit of acceptable canopy density has yet to be quantified for either metapopulation. Field observations in south Florida have found clusters of Florida bristle fern desiccated when the immediate canopy above plants was destroyed or substantially reduced, allowing high amounts of light into the understory (Possley 2019, entire); however, over the course of many months, these clusters eventually recovered. In addition, this dense, closed canopy may serve as a shield for Florida bristle fern to inhibit the growth of other plant species on the same part of an inhabited rock area (van der Heiden and Johnson 2014, p. 9). In central Florida, the average canopy closure where Florida bristle fern occurs has been estimated to be more than 75 percent (van der Heiden and Johnson 2014, p. 9). Although there are several occurrences in these mesic hammocks where sunlight can be observed through the canopy, generally the habitat is shaded throughout the year, with the lowest canopy cover recorded at 64 percent in December (van der Heiden and Johnson 2014, pp. 8, 20). This information was obtained from a study of short duration (September–December 2013), and it is likely that percent canopy cover and consequently shading would be greater in summer months when foliage is densest (van der Heiden and Johnson 2014, p. 8).

Surrounding habitat that minimizes the effects from drying winds and solar radiation and provides a stable and protective shelter is necessary for this fern to survive. A suitable habitat

size and quality is necessary to provide a functioning canopy cover that maintains the microclimate conditions (humidity, moisture, temperature, and shade) essential to the conservation of the subspecies. Field observations of Florida bristle fern in central Florida found more robust and healthy ferns in an interior hammock with approximately 300 m (985 ft) of surrounding habitat between it and cleared pastureland. This was compared to ferns in a hammock that had only 100 m (328 ft) of surrounding habitat separating it from the edge of cleared pasture. The ferns located nearer the edge (*i.e.*, approximately within 100 m (328 ft)) of the adjacent cleared pasture had visible signs of stress, and these ferns appeared desiccated and had fewer reproductive bristles than the ferns in the hammock and with 300 m (985 ft) of surrounding vegetation (van der Heiden 2016, p. 3). These observations are consistent with findings that documented edge effects on ferns up to 200 m (656 ft) into the forest (Hylander *et al*. 2013, pp. 559–560). Edge effects included loss of individual plants, loss of percent canopy cover, and increased temperature, sunlight, and wind on the microclimate (Hylander *et al*. 2013, pp. 559–560; Silva and Schmitt 2015, pp. 227–228). There are no similar studies for the fern in Miami-Dade County, though it is assumed their occurrence in solution holes provides some protection from the edge effects of the hammock habitat.

Therefore, based on the information above, we identify dense canopy cover of surrounding native vegetation (at least 300 m (985 ft) as measured from the edge of and surrounding the boulder substrate for central Florida) that consists of the upland hardwood forest hammock habitats and provides shade, shelter, and moisture to be a physical or biological feature essential to the conservation of Florida bristle fern.

*Sites for Reproduction, Germination, and Spore Production and Dispersal*

Growth and reproduction of Florida bristle fern can occur through spore dispersal, rhizome (horizontal stem) growth, and clonal vegetative fragments (80 FR 60440; October 6, 2015). The habitats identified above provide plant communities, which require a self-maintaining closed canopy and climate-controlled interior, an adequate space for the rhizomal growth,

dispersal of seeds, sporophyte and gametophyte survival, and recruitment of plant fragments.

While specific information on spore dispersal distances is largely unknown for this subspecies, the microclimate is found to be essential for spore germination and survival. Dispersal of spores, gametophytes, and vegetative fragments may take place via water-based methods, animals, and, to a lesser extent, wind-driven opportunities. In the *Hymenophyllaceae* Family of ferns, spores lack the capacity to withstand desiccation, are not known to be dispersed long distance through the wind, and depend upon the moist microclimate for growth and survival (Mohammad Rosli 2014, p. 21).

In terms of protecting the subspecies' genetic components, a recent study of Florida bristle fern chloroplast DNA found little genetic differentiation between the two metapopulations, which can indicate that both metapopulations are recently established from a single source or that there is a favoring of a genetic sequence (Hughes 2015, entire). Lower genetic variation in a population produces a lower effective population (the number of individuals that can undergo cross-fertilization). In such small populations, such as with Florida bristle fern, any loss of individuals may also be a loss of genetic information and a reduction of subspecies fitness (Fernando *et al.* 2015, pp. 32–34). Therefore, ensuring space for reproduction, germination, spore production, and dispersal of the subspecies helps ensure the conservation of genetic information and subspecies fitness.

Adequate space and the maintenance of the stable microclimate habitat support clonal growth as well as the reproductive stages of Florida bristle fern. The rare American hart's tongue fern (*Asplenium scolopendrium* var. *americanum*) is a species like the Florida bristle fern that relies on the specific microclimate conditions of high humidity, moisture, and shelter. In a study of the American hart's tongue fern, the presence of these microclimate habitat conditions determined the success of the fern's life-history processes (growth, reproduction, and spore production) (Fernando *et al*. 2015, p. 33).

Interior condition of the hammock microclimate (*e.g.*, humidity, temperature) are

influenced by the hammock's own canopy and hydrology and the vegetative structure and hydrology of the surrounding habitat. For example, in south Florida, the pre-settlement landscape of the rockland hammocks on the Miami Rock Ridge occurred as "small islands" in a sea of pine rockland and seasonally flooded prairies, or transverse glades (shallow channels through the Miami Rock Ridge that had wet prairie vegetation and moved water out of the Everglades Basin toward the coast). It has been estimated that originally more than 500 hammocks occurred in this area, ranging in size from 0.1 ha (0.2 ac) to over 40 ha (100 ac) (Craighead 1972, p. 153). The vast majority of these hammocks have been destroyed, and those that remain are significantly reduced in size. In addition, the habitats surrounding the remaining rockland hammocks have been drastically altered or destroyed, primarily through urban and agricultural development, and, in many cases, no longer function as effective or efficient buffers to protect rockland hammocks from the impacts of changes in temperature and humidity, or extreme weather or natural stochastic events (*e.g.*, frost, high winds, and hurricanes/tropical storms). This fragmentation and distance between hammocks can hinder water-based dispersal and the recruitment of new plants and gametophytes. Fragmentation may reduce the stable, protected microclimate conditions and the survivability of spores within that microclimate. Thus, the hammock microhabitat supporting the subspecies must be of a suitable minimum size with sufficiently dense canopy, substrate, and understory vegetation within a hammock's interior, and there must also be intact surrounding habitat of sufficient amount, distribution, and space to support appropriate growing conditions for Florida bristle fern across its range.

The central Florida metapopulation of Florida bristle fern occurs in two mesic hammocks, which exist as part of a wetland matrix of hydric hammock, mixed wetland hardwoods, cypress/tupelo floodplain swamp, and freshwater marsh. The surrounding existing suitable habitat and substrate are essential to providing space for growth, reproduction, and dispersal of the existing populations.

Therefore, we identify the habitats described as physical or biological features above that

also provide suitable microhabitat conditions, hydrology, and connectivity that can support the subspecies' growth, distribution, and population expansion (including rhizomal growth, spore dispersal, and sporophyte and gametophyte growth and survival) to be a physical or biological feature essential to the conservation of Florida bristle fern.

*Habitats Protected from Disturbance*

Florida bristle fern can be outcompeted by other native, as well as nonnative, invasive species. Nonnative plants and native weeds, including a few of the most common invasive plants such as golden pothos (*Epipremnum pinnatum* cv. *aureum*), arrowhead vine (*Syngonium podophyllum*), Brazilian pepper (*Schinus terebinthifolius*), and Burma reed (*Neyraudia reynaudiana*), compete with Florida bristle fern for space, light, water, and nutrients; limit the subspecies' growth and abundance; and can make habitat conditions unsuitable for the subspecies. Nonnative plant species have affected hammock habitats where Florida bristle fern occurs, and as identified in the final listing rule (80 FR 60440; October 6, 2015), are considered one of the threats to the subspecies (Snyder *et al.* 1990, p. 273; Gann *et al.* 2002, pp. 552–554; Inventory 2010, pp. 22, 26). Invasive vines such as golden pothos, arrowhead vine, *Philodendron* spp., and *Monstera* spp., have become an increasing threat to hammocks in south Florida and can result in canopy collapse during hurricanes or other high wind events (Duncan 2020, pers. comm.). Nonnative plants can outcompete and displace Florida bristle fern in solution holes, and can blanket existing occurrences, blocking out all light and smothering the fern (Possley 2013c, pers. comm.). Native bryophytes, especially leafy liverworts such as *Neckeropsis undulata*, also compete with Florida bristle fern and gain the advantage in higher light levels (Possley 2019, pp. 3–4). In addition to the negative impacts of nonnative and native invasive plants, feral hogs can impact substrate and vegetation (directly) and habitat suitability (indirectly). Rooting from hogs can destroy existing habitat by displacing smaller rocks where the subspecies grows and potentially damage or eliminate a cluster of the fern (Werner 2013, pers. comm.). In the Withlacoochee State Forest, damaged areas from feral hogs are also more susceptible to invasion

from nonnative plant species (Werner 2013, pers. comm.).

Therefore, based on the information above, we identify a plant community of predominantly native vegetation that is minimally disturbed or free from human-related disturbance, with either no competitive nonnative, invasive plant species, or such species in quantities low enough to have minimal effect on Florida bristle fern, to be a physical or biological feature essential to the conservation of Florida bristle fern.

*Summary of Essential Physical or Biological Features*

We derive the specific physical or biological features essential to Florida bristle fern conservation from studies of the species' habitat, ecology, and life history as described above, in the final listing rule (80 FR 60440; October 6, 2015), and the proposed critical habitat rule (85 FR 10371; February 24, 2020). We have determined that the following physical or biological features are essential to Florida bristle fern conservation:

(1) Upland hardwood forest hammock habitats of sufficient quality and size to sustain the necessary microclimate and life processes for Florida bristle fern.

(2) Exposed substrate derived from oolitic limestone, Ocala limestone, or exposed limestone boulders, which provide anchoring and nutritional requirements.

(3) Constantly humid microhabitat consisting of dense canopy cover, moisture, stable high temperature, and stable monthly average humidity of 90 percent or higher, with intact hydrology within hammocks and the surrounding and adjacent wetland communities.

(4) Dense canopy cover of surrounding native vegetation that consists of the upland hardwood forest hammock habitats and provides shade, shelter, and moisture.

(5) Suitable microhabitat conditions, hydrology, and connectivity that can support Florida bristle fern's growth, distribution, and population expansion (including rhizomal growth, spore dispersal, and sporophyte and gametophyte growth and survival).

(6) Plant community of predominantly native vegetation that is minimally disturbed or free from human-related disturbance, with either no competitive nonnative, invasive plant

species, or such species in quantities low enough to have minimal effect on Florida bristle fern.

**Special Management Considerations or Protection**

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species and which may require special management considerations or protection. The features essential to the conservation of Florida bristle fern may require special management considerations or protections to reduce threats related to habitat modification and destruction primarily due to development, agricultural conversion, hydrologic alteration, nonnative and invasive species, public use, and sea level rise. For more information on threats to Florida bristle fern, please refer to the final listing rule (80 FR 60440; October 6, 2015).

The four known populations of the south Florida metapopulation occur on County-managed conservation lands at Castellow Hammock, Hattie Bauer Hammock, Fuchs Hammock, and Meissner Hammock. However, these areas are still vulnerable to the effects of activities in the surrounding areas, including agricultural clearing and hydrologic alterations. In addition, these areas are vulnerable to threats from nonnative, invasive species, especially if current control efforts are discontinued or decreased. The small amount of rockland hammock or mixed rockland/mesic hammock is vulnerable to impacts related to urban and agricultural development, including hydrologic alterations, and threats by nonnative, invasive species (especially as such areas are often not actively managed for nonnative species). Also, these areas are open to public access, and Florida bristle fern may be at risk of collection, damage from people climbing on them, and impacts to microclimate due to installation and improvements of trails (Duncan 2020, pers. comm.). We expect these hammock communities in south Florida to be further degraded due to sea level rise and the increase in the number of flood events, which would fully or partially inundate some rockland hammocks along the coast and in the southern portion of Miami-Dade County and in Everglades National Park. In the short to mid-term, sea level rise

may benefit the fern by lifting a freshwater lens into previously drained areas or areas experiencing a lowered water table, which may restore or preserve a favorable microclimate for the subspecies (Duncan 2020, pers. comm.). Over the long term, however, sea level rise is expected to increase the salinity of the water table and soils, resulting in vegetation shifts across the Miami Rock Ridge.

The two known populations of the central Florida metapopulation both occur on State-owned land in the Jumper Creek Tract of the Withlacoochee State Forest. Land clearing and hydrological alterations on private lands adjacent to the Jumper Creek Tract continue to be threats to the subspecies' populations and habitat. In addition, while the Withlacoochee State Forest is generally considered public conservation land, it is managed by the Florida Forest Service and is subject to logging in certain areas. Logging is less likely to occur on the Jumper Creek Tract due to the existing matrix of hammocks and pinelands (versus a predominantly pineland community). This area is also subject to impacts from nonnative, invasive species, although forest management on the Jumper Creek Tract currently includes nonnative plant control. Moisture and humidity levels of the fern habitat are also dependent upon the hydrology of the surrounding or adjacent wetlands. Alterations in the natural hydrologic regime within the hammock and these adjacent habitats affect these physical or biological features. Draining, ditching, and excessive pumping of groundwater can lower the water table in hammocks, causing reduced moisture and humidity levels. In such cases, mesic hammocks, for example, may undergo shifts in species composition toward xeric hammock composition. These impacts to hammock systems may ultimately reduce or eliminate suitable habitat for the subspecies. A lowered water table or dewatering of hammocks can also render the habitat vulnerable to catastrophic fire.

Special management considerations and protections that will address these threats include increased coordination and conservation of the subspecies and its habitat (including preventing impacts to hammock hydrology, canopy cover, microclimate, and substrate) on Federal lands

and, with the cooperation of State, County, and private landowners, on non-Federal lands. Habitat restoration and management efforts (including nonnative plant treatments) of high-priority sites will be emphasized. At this time, the subspecies does not occur on Federal lands for either metapopulation, but reintroduction is being explored for Royal Palm Hammock in Everglades National Park in south Florida.

**Criteria Used to Identify Critical Habitat**

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat.

The current distribution of Florida bristle fern is reduced from its historical distribution to a level where it is in danger of extinction. We anticipate that recovery will require continued protection of existing populations and habitat, as well as establishing sites that more closely approximate its historical distribution, in order to ensure there are adequate numbers of Florida bristle fern in stable populations and that these populations occur over a wide geographic area within both metapopulations. This strategy will help to ensure that catastrophic events, such as fire, cannot simultaneously affect all known populations. Rangewide recovery considerations, such as maintaining existing genetic diversity and striving for representation of all major portions of the subspecies' historical range, were considered in formulating this critical habitat designation.

The amount and distribution of the designated critical habitat are designed to provide:

(1) The processes that maintain the physical or biological features that are essential to the conservation of the subspecies;

(2) Sufficient quality and size of habitat to support the persistence of the physical or

biological features for the subspecies (hammock microclimate, humidity, temperature, substrate, canopy cover, native plant community);

(3) Habitat to expand the distribution of Florida bristle fern into historically occupied areas;

(4) Space to increase the size of each population to a level where the threats of genetic, demographic, and normal environmental uncertainties are diminished; and

(5) Additional space to improve the ability of the subspecies to withstand local or regional-level environmental fluctuations or catastrophes.

For Florida bristle fern, we are designating critical habitat in areas within the geographical area occupied by the subspecies at the time of listing. For those areas, we determined that they were of suitable habitat within the known historical range, with current occurrence records, contain one or more of the physical or biological features essential to the conservation of the subspecies, and require special management considerations or protection. We are also designating specific areas outside the geographical area occupied by the subspecies at the time of listing because we have determined that a designation limited to occupied areas would be inadequate to ensure the conservation of the subspecies. For those unoccupied areas, we have determined that it is reasonably certain that the unoccupied areas will contribute to the conservation of the subspecies and that the areas contain one or more of the physical or biological features that are essential to the conservation of the subspecies.

*Sources of Data to Identify Critical Habitat Boundaries*

To determine the general extent, location, and boundaries of the designated critical habitat, we used the following sources of information:

(1) Historical and current records of Florida bristle fern occurrence and distribution found in publications, reports, personal communications, and associated voucher specimens housed at museums and private collections;

(2) Florida Fish and Wildlife Commission (Commission), Inventory, Institute for

Regional Conservation (Institute), and Fairchild geographic information system (GIS) data showing the location and extent of documented occurrences of Florida bristle fern;

(3) Reports and databases prepared by the Institute and Fairchild;

(4) ESRI ArcGIS online basemap aerial imagery (December 2010) and historical aerial imagery (1938 for Miami-Dade County; 1941 for Sumter County); and

(5) GIS data depicting land cover (Commission and Inventory Cooperative Land Cover Map, version 3.3) within Miami-Dade and Sumter Counties, and the location and habitat boundaries of rockland hammocks in Miami-Dade County (Institute *et al.* 2005; Institute 2009; Miami-Dade County Information Technology Department 2021; Florida Geographic Data Library 2017; Commission and Inventory 2020; Sumter County 2019).

The presence of the physical or biological features was determined using the above sources of information as well as site visits by biologists and botanists (Possley 2019, entire) through field surveys, habitat mapping, and substrate mapping by the Institute (van der Heiden and Johnson 2014, entire; Possley 2015, pers. comm.; van der Heiden 2016, entire), and follow-up discussions with Miami-Dade County, Fairchild staff, and private landowners.

*Areas Occupied at the Time of Listing*

The occupied critical habitat units were delineated around the documented extant populations and the existing physical or biological features that require special management considerations or protection. We have determined that all currently known occupied habitat for Florida bristle fern was also occupied by the subspecies at the time of listing, and that these areas contain the physical or biological features essential to the conservation of the subspecies and which may require special management considerations or protection. We are designating these areas as occupied habitat.

*Occupied Habitat—South Florida Metapopulation (Miami-Dade County)*

Occupied habitat, which for the south Florida metapopulation occurs in rockland hammock habitat, was identified based on available occurrence data for Florida bristle fern.

Rockland hammock boundaries were delineated using the Institute's 2009 rockland hammock GIS layer. Based on our assessment of rockland hammocks on the Miami Rock Ridge (see above, under *Sites for Reproduction, Germination, and Spore Production and Dispersal*), we included all of the remaining rockland hammocks currently occupied by Florida bristle fern within the critical habitat assessment. Next, we grouped rockland hammocks, where appropriate, to form units. Rockland hammocks in close proximity to one another provide connectivity and allow spore dispersal (water-based, animal, or wind-driven dispersal) from occupied to adjacent habitat, which is important for establishing new clusters of plants to increase population resiliency and subspecies redundancy. In addition, based on the Act's implementing regulations (50 CFR 424.12(d)), when habitats are in close proximity to one another, an inclusive area may be designated. Although the population historically observed in Ross Hammock has been reported as extirpated, we combined Ross Hammock with Castellow Hammock into a single occupied unit (unit South Florida 4 [SF 4]) because: (1) The subspecies is exceedingly hard to find even by species experts and, therefore, may be present even though it has been reported as extirpated; (2) gametophytes, the very cryptic reproductive stage of the fern, are not recognizable in the field and could still be present on site even if the sporophytes, the recognizable plant form, have been extirpated; (3) there is the likelihood that spores could travel between occupied and adjacent habitat, particularly during high-water events; and (4) habitat directly adjacent to known occurrences (*e.g.*, separated only by a road) can also be occupied if habitat conditions are suitable. Three occupied units (Castellow and Ross, Hattie Bauer, and Fuchs and Meissner hammocks) totaling 73 ha (180 ac) are designated as critical habitat for the south Florida metapopulation.

*Occupied Critical Habitat—Central Florida Metapopulation (Sumter County)*

For the central Florida populations, habitat was identified as the intersection of mesic, hydric, and elevated hydric hammocks that contain boulder substrate (van der Heiden 2016, p. 3).

On the Jumper Creek Tract, known extant populations of Florida bristle fern occur in two small mesic hammocks located within and supported by a matrix of hydric hammock and mixed wetland hardwood communities. The mesic hammocks are approximately 0.18 ha (0.44 ac) and 0.11 ha (0.28 ac) in size and difficult to differentiate from the surrounding forested vegetation. Our evaluation of occurrence data for this metapopulation also included historical observations of the Florida bristle fern south of the Jumper Creek Tract where the subspecies was formerly known to occur near Battle Slough (near the existing town of Wahoo) and located in close proximity to the extant populations. In this area, habitat types include mixed wetland hardwoods surrounded by freshwater marsh, cypress/tupelo, and mixed hardwood-coniferous forest. Using the information mentioned above on current and historical occurrences and habitat type and applying the data for suitable substrate (boulders), we delineated a contiguous unit of occupied habitat for Florida bristle fern.

As discussed in **Physical or Biological Features Essential to the Conservation of the Species,** above, suitable hammock micro-conditions in this landscape (specifically the high humidity, stable temperatures, moisture, and shade) required by Florida bristle fern are supported by the surrounding vegetation, which minimizes drastic changes in temperature or humidity at the microclimate scale. Generally, forest edges receive more light, are prone to greater desiccation, and have a reduced biodiversity compared to the forest interiors. Pronounced edge effects from adjacent land clearing and fragmentation, such as with agricultural lands, reduce the quality of forested habitat and detrimentally affect the interior microclimate.

To most accurately represent suitable habitat for Florida bristle fern within these central Florida communities and ensure the persistence of the necessary microclimate, we consider natural communities within 300 m (985 ft) as measured from the edge of and surrounding the boulder substrate (equivalent to 9.3 ha (23 ac)) to be habitat essential to the conservation of the subspecies (van der Heiden 2014, pers. comm.; van der Heiden 2016, p. 3) in protecting the habitat from edge effects. The suitable habitat communities and the distribution of exposed

limestone substrate (boulder) in these communities were delineated with the use of ground survey and satellite imagery data (van der Heiden and Johnson 2014, pp. 6–7; van der Heiden 2016, p. 3). Site-level data of vegetative communities produced from aerial photography (Commission and Inventory 2020) and feedback from species experts and local biologists on habitat and substrate occurrence in this area were also used.

Thus, using the best available data, one occupied unit totaling 742 ha (1,834 ac) is designated as critical habitat for the central Florida metapopulation. This critical habitat designation consists of a contiguous unit within and adjacent to Jumper Creek Tract of intact vegetation (*i.e.*, not cleared) in mesic or hydric hammocks and mixed wetland hardwood communities having exposed limestone substrate (boulders), which have, at minimum, a 300-m (985-ft) radius of surrounding intact vegetation.

*Areas Outside the Geographic Area Occupied at the Time of Listing*

To consider for designation areas not occupied by the subspecies at the time of listing, we must determine that these areas are essential for the conservation of Florida bristle fern. In south Florida, occupied critical habitat for the subspecies is within a relatively small amount of highly fragmented habitat and occupied patches are generally isolated from one another within the landscape. In addition, the extent of the geographic area in south Florida (Miami-Dade County) that is currently occupied by the plant is substantially (nearly 80 percent) smaller than its historical range. In central Florida, the two known existing populations are in very close proximity and also in a much smaller area than the known historical range. Because of this fragmentation and loss of range, both metapopulations have lower resiliency under these current conditions compared to historical occurrences, and, therefore, the subspecies' adaptive capacity (representation) and redundancy has been reduced.

Based on these factors in relation to the threats to Florida bristle fern, we have determined that designation of unoccupied areas are needed to conserve the species; thus, additional habitat is essential to provide a sufficient amount of habitat (total area and number of

patches) and connectivity for the long-term conservation of the plant. Therefore, we have identified and are designating as critical habitat specific areas outside the geographical area occupied by the subspecies at the time of listing that are essential for the conservation of the subspecies. This will ensure enough sites and individuals exist for each metapopulation of Florida bristle fern to recover. We used habitat and historical occurrence data and the physical or biological features described earlier to identify unoccupied habitat essential for the conservation of the Florida bristle fern. As discussed in more detail below, the unoccupied areas we selected are essential for the conservation of the subspecies because they:

(1) Consist of a documented historical, but now extirpated, occurrence of the subspecies;

(2) Could still have Florida bristle fern gametophytes on site;

(3) Provide areas of sufficient size to support ecosystem processes;

(4) Provide suitable habitat (that contains some or all of the physical or biological features essential to the conservation of the subspecies) that allow for growth and expansion; and

(5) Occur in the known historical range of the subspecies.

These unoccupied areas provide sufficient space for growth and reproduction for the subspecies within the historical range and will provide ecological diversity so that the subspecies has the ability to evolve and adapt over time (representation) and ensure that the subspecies has an adequate level of redundancy to guard against future catastrophic events. These areas also represent the areas within the historical range with the best potential for recovery of the subspecies due to their current conditions, provide habitat and space to support spore dispersal and new growth, and are likely suitable for reintroductions. Also, the areas with historical occurrences of Florida bristle fern have a high likelihood of gametophyte presence, the very cryptic reproductive stage of the fern (Possley 2020, pers. comm.), that could develop into sporophytes (the recognizable mature plant) under the proper conditions (80 FR 60440; October 6, 2015). For these reasons, we have reasonable certainty that the unoccupied areas will contribute to the conservation of the species.

*Unoccupied Habitat—South Florida Metapopulation (Miami-Dade County)*

The existing suitable habitat for the south Florida metapopulation consists of a patchwork of small parcels. Therefore, we must ensure the integrity of the solution hole and canopy cover, which is responsible for maintaining the stable damp, humid, and shaded microclimate identified as a physical or biological feature for the subspecies.

Using the Institute's 2009 rockland hammock GIS layer, the Commission and Inventory's Cooperative Land Cover site-level data for rockland hammocks, the Institute *et al.*'s 2015 Natural Forest Community GIS layer for hammocks, and site visit information from Service staff biologists and botanists from Fairchild and Miami-Dade County, we evaluated all unoccupied sites within rockland hammock habitats, including mixed rockland/mesic hammock and rockland hammock with connecting mixed wetland hardwood habitat, in Miami-Dade County. Specifically, we reviewed available historical aerial photography of 20 rockland hammocks historically occupied, but now unoccupied, by the subspecies. Ten additional potential sites were visited by Service staff. Also, specific information provided by Miami-Dade County and Fairchild on four additional areas was reviewed. A site was considered in the evaluation for unoccupied critical habitat if it is within the historical range of the subspecies and:

(1) Holds a documented historical occurrence;

(2) Contains one or more of the physical or biological features essential to the conservation of the subspecies;

(3) Provides viable habitat for introductions or could be restored to support Florida bristle fern;

(4) Occurs at the edge of the range and provides areas that would allow for growth and expansion; or

(5) Occurs near an occupied site (for potential recruitment).

Each site will, in conjunction with occupied areas of designated critical habitat, support the conservation of the subspecies. Based on our review, we identified four unoccupied rockland

hammock units on the Miami Rock Ridge outside of Everglades National Park (see table 1, below). These four units represent the units with documented, but now extirpated, historical occurrences with intact rockland hammock within the historical range of the subspecies outside of the Everglades National Park. Within the Everglades National Park, we identified a fifth unit, the Royal Palm Hammock, for inclusion in the designated critical habitat. This hammock was also historically occupied by the subspecies but was not occupied at the time of listing. The resulting five unoccupied designated units consist of 136 ha (335 ac) and are considered essential for the conservation of Florida bristle fern because they protect habitat needed to recover the subspecies and reestablish wild populations within the known historical range of the subspecies in Miami-Dade County. The unoccupied units each contain one or more of the physical or biological features essential to the conservation of the subspecies and are likely to provide for the conservation of the subspecies. The majority of four of the unoccupied units are on lands managed by Miami-Dade County, and the fifth unoccupied unit is on land managed by Everglades National Park.

*Unoccupied Habitat—Central Florida Metapopulation (Sumter County)*

For the central Florida metapopulation, criteria for determining unoccupied critical habitat included units that:

(1) Hold a documented historical occurrence;

(2) Contain one or more of the physical or biological features essential to the conservation of the subspecies;

(3) Provide space for growth and recovery (to add resiliency to a small population);

(4) Provide viable habitat for introductions; and

(5) Provide connectivity across the range of the subspecies.

Unoccupied habitat was delineated based on documented historical occurrences, existing suitable habitat (as defined by the physical or biological features), and evaluation of the habitat and substrate delineation mapping (van der Heiden 2016, pp. 5–7) with data obtained through

field surveys and satellite mapping. The one unoccupied unit designated as critical habitat consists of approximately 747 ha (1,846 ac) (see table 1, below). It consists of documented historically occupied (now extirpated) habitat with suitable wetland and upland communities having intact vegetation (*i.e.*, not cleared) and hammocks and exposed limestone boulders with at least a 300-m (985-ft) radius or greater of surrounding native vegetation (van der Heiden 2014, pers. comm.; van der Heiden 2016, p. 3). Its size was based on the conditions necessary to maintain the physical or biological features essential to the conservation of the subspecies. It is considered essential for the conservation of Florida bristle fern because it protects habitat needed to recover the subspecies and reestablish wild populations within the known historical range of the subspecies in Sumter County. The unoccupied unit contains one or more of the physical or biological features essential to the conservation of the subspecies and is likely to provide for the conservation of the subspecies.

*Critical Habitat Maps*

When determining critical habitat boundaries, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack the physical or biological features necessary for Florida bristle fern. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this rule have been excluded by text in the rule and are not included for designation as critical habitat. Therefore, a Federal action involving these lands would not trigger section 7 consultation under the Act with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat.

The critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document under **Regulation Promulgation**. We include more detailed information on the boundaries of the critical habitat

designation in the discussion of individual units below. We will make the coordinates or plot points or both on which each map is based available to the public at *https://www.regulations.gov* under Docket No. FWS-R4-ES-2019-0068, at *https://www.fws.gov/office/florida-ecological-services/library*, and at the Florida Ecological Services Field Office, Vero Beach (see **FOR FURTHER INFORMATION CONTACT**, above).

**Final Critical Habitat Designation**

We are designating approximately 1,698 ha (4,195 ac) in 10 units in Miami-Dade and Sumter Counties, Florida, as critical habitat for Florida bristle fern. The designated critical habitat consists of units identified for the south and central Florida metapopulations and are delineated in (1) south Florida by rockland/tropical hammocks of Miami-Dade County (208 ha (515 ac)); and (2) central Florida by Withlacoochee State Forest, Jumper Creek Tract, and adjacent lands in Sumter County (1,489 ha (3,680 ac)). Four of the units are currently occupied by the subspecies and contain those physical or biological features essential to the conservation of the subspecies but may require special management considerations or protection. Six of the units are currently unoccupied by the subspecies but are essential for the conservation of the subspecies. Table 1 shows the name, occupancy, area, and land ownership of each unit within the critical habitat designation for Florida bristle fern. Land ownership within the entire designated critical habitat consists of Federal (4 percent), State (91 percent), County (3 percent), and private (2 percent) ownership.

**Table 1.—Name, occupancy, area, and land ownership of designated critical habitat units for Florida bristle fern (*Trichomanes punctatum* ssp. *floridanum*).** (Area estimates reflect all land within critical habitat unit boundaries. All areas are rounded to the nearest whole hectare (ha) and acre (ac). Ownership information is based on Miami-Dade County data (2021) and Sumter County data (2019).)

| **Rockland/Tropical Hammocks of South Florida, Miami-Dade County** | | | | | | |
|---|---|---|---|---|---|---|
| **Unit** | **Occupancy** | **Federal ha (ac)** | **State ha (ac)** | **County ha (ac)** | **Private/Other ha (ac)** | **Total ha (ac)** |
| Matheson Hammock (SF 1) | Unoccupied | 0 | 0 | 21 (51) | 2 (4) | 22 (55) |
| Snapper Creek Hammock (SF 2) | Unoccupied | 0 | 3 (8) | 0 | 3 (7) | 6 (15) |
| Charles Deering Estate Hammock (SF 3) | Unoccupied | 0 | 43 (106) | 0 | 0 | 43 (106) |
| Castellow and Ross Hammocks (SF 4) | Occupied | 0 | 17 (43) | 25 (63) | 13 (32) | 56 (139) |
| Silver Palm Hammock (SF 5) | Unoccupied | 0 | 4 (10) | 0 | 0 | 4 (10) |
| Hattie Bauer Hammock (SF 6) | Occupied | 0 | 0 | 4 (10) | 2 (6) | 6 (16) |
| Fuchs and Meissner Hammocks (SF 7) | Occupied | 0 | 2 (5) | 8 (19) | 0 (1) | 10 (25) |
| Royal Palm Hammock (SF 8) | Unoccupied | 61 (150) | 0 | 0 | 0 | 61 (150) |
| **South Florida Total** | | **61 (150)** | **70 (172)** | **58 (144)** | **20 (50)** | **208 (515)** |
| **Withlacoochee State Forest, Jumper Creek Tract, and adjacent lands of Central Florida, Sumter County** | | | | | | |
| **Unit** | **Occupancy** | **Federal ha (ac)** | **State ha (ac)** | **County ha (ac)** | **Private/Other ha (ac)** | **Total ha (ac)** |
| CF 1 | Occupied | 0 | 726 (1,795) | 0 | 16 (39) | 742 (1,834) |
| CF 2 | Unoccupied | 0 | 747 (1,846) | 0 | 0 | 747 (1,846) |
| **Central Florida Total** | | **0** | **1,473 (3,641)** | **0** | **16 (39)** | **1,489 (3,680)** |
| **Total South and Central Florida** | | **61 (150)** | **1,543 (3,813)** | **58 (144)** | **36 (89)** | **1,698 (4,195)** |

Note: Area sizes may not sum due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for Florida bristle fern, below.

*Rockland/Tropical Hammocks of South Florida, Miami-Dade County, Florida*

The designated critical habitat for the south Florida metapopulation is composed of eight units (SF 1–SF 8) consisting of approximately 208 ha (515 ac) located between South Miami and eastern Everglades National Park in central and southern Miami-Dade County, Florida.

SF 1—Matheson Hammock

We identified this area as essential for the conservation of the Florida bristle fern. SF 1 consists of approximately 22 ha (55 ac) of habitat in Matheson Hammock in and around Matheson Hammock Park in Miami-Dade County, Florida. This unit is composed of 20.6 ha (51.1 ac) of County-owned land that is primarily managed cooperatively by Miami-Dade County's Environmentally Endangered Lands (EEL) program and Natural Areas Management (NAM) division. The remaining 1.5 ha (3.7 ac) are privately owned and managed by the landowners through the EEL Covenant Program and/or are protected from development through Miami-Dade County's designation as Natural Forest Communities. Matheson Hammock is within the historical range of Florida bristle fern but was not occupied by the subspecies at the time of listing.

Although it is currently considered unoccupied, Florida bristle fern was documented here in the past (80 FR 60440; October 6, 2015), and it is possible that the site still contains the fern's gametophytes (the very cryptic reproductive stage of the fern) (Possley 2020, pers. comm.) that could develop into sporophytes (the recognizable mature plant) under the proper conditions (80 FR 60440; October 6, 2015). Also, this unit contains some or all of the physical or biological features essential to the conservation of the subspecies. Unit SF 1 possesses those characteristics as described by the first identified physical or biological feature (upland hardwood forest hammock habitats of sufficient quality and size to sustain the necessary microclimate and life processes for Florida bristle fern) and the second identified physical or biological feature (exposed substrate derived from oolitic limestone, Ocala limestone, or exposed limestone boulders, which provide anchoring and nutritional requirements). The third through sixth identified physical or biological features are degraded in this unit, but with appropriate

management and restoration actions (such as removal of invasive plant species), these physical or biological features can be restored. Based upon the presence of key habitat needs and the conditions of the site, this unit constitutes habitat for the Florida bristle fern.

This unit will serve to protect habitat needed to recover the subspecies and reestablish wild populations within the historical range in Miami-Dade County. Re-establishing a population in this unit would increase redundancy in the South Florida metapopulation. It would also provide habitat for recolonization in the case of stochastic events (such as hurricanes), should other areas of suitable habitat be destroyed, or should Florida bristle fern be extirpated from one of its currently occupied locations. This unit is essential for the conservation of the subspecies because it will provide habitat for range expansion in known historical habitat that is necessary to increase viability of the subspecies by increasing its resiliency, redundancy, and representation.

We are reasonably certain that this unit will contribute to the conservation of the subspecies because the need for conservation efforts is recognized and is being discussed by our conservation partners, and methods for restoring habitat and reintroducing the subspecies are being developed for this unit. As stated previously, the majority of this unit is composed of County-owned land and primarily managed cooperatively by Miami-Dade County's EEL program and NAM division. The EEL program's focus is on the "protection and conservation of endangered lands," and these EEL areas are managed for restoration and conservation through actions such as invasive plant removal. In addition, State and County partners have shown interest in reintroduction efforts for the Florida bristle fern in this area. The privately owned portions of this unit are either enrolled in the County's EEL Covenant Program, a 10-year commitment to restore and manage the property as a natural area in exchange for tax incentives, or designated as a Natural Forest Community under Miami-Dade County's Code of Ordinances (chapter 24, article IV, division 2, section 24–49.2), which limits development of rockland hammocks to no more than 10 percent of the site.

SF 2—Snapper Creek

We identified this area as essential for the conservation of the subspecies. SF 2 consists of approximately 6 ha (15 ac) of habitat in Snapper Creek Hammock adjacent to R. Hardy Matheson Preserve in Miami-Dade County, Florida. This unit consists of 3.2 ha (8 ac) of State-owned land that is primarily managed cooperatively by Miami-Dade County's EEL program and NAM division and 2.6 ha (7 ac) of University of Miami-owned land that is managed in cooperation with Fairchild. Snapper Creek is within the historical range of Florida bristle fern but was not occupied by the subspecies at the time of listing.

Although it is currently considered unoccupied, Florida bristle fern was documented here in the past (80 FR 60440; October 6, 2015), and it is possible that the site still contains the fern's gametophytes (the very cryptic reproductive stage of the fern) (Possley 2020, pers. comm.) that could develop into sporophytes (the recognizable mature plant) under the proper conditions (80 FR 60440; October 6, 2015). Also, this unit contains some or all of the physical or biological features essential to the conservation of the subspecies. Unit SF 2 possesses those characteristics as described by the first identified physical or biological feature (upland hardwood forest hammock habitats of sufficient quality and size to sustain the necessary microclimate and life processes for Florida bristle fern) and the second identified physical or biological feature (exposed substrate derived from oolitic limestone, Ocala limestone, or exposed limestone boulders, which provide anchoring and nutritional requirements). The third through sixth identified physical or biological features are degraded in this unit, but with appropriate management and restoration actions (such as removal of invasive plant species), these physical or biological features can be restored. Based upon the presence of key habitat needs and the conditions of the site, this unit constitutes habitat for the Florida bristle fern.

This unit will serve to protect habitat needed to recover the subspecies and reestablish wild populations within the historical range in Miami-Dade County. Re-establishing a population in this unit would increase the subspecies' redundancy in the South Florida metapopulation. It

will also provide habitat for recolonization in the case of stochastic events (such as hurricanes), should other areas of suitable habitat be destroyed, or should Florida bristle fern be extirpated from one of its currently occupied locations. This unit is essential for the conservation of the subspecies because it will provide habitat for range expansion in known historical habitat that is necessary to increase viability of the subspecies by increasing its resiliency, redundancy, and representation.

We are reasonably certain that this unit will contribute to the conservation of the subspecies because the need for conservation efforts is recognized and is being discussed by our conservation partners, and methods for restoring habitat and reintroducing the subspecies are being developed for this unit. As stated previously, this unit is composed of State-owned land that is primarily managed cooperatively by Miami-Dade County's EEL program and NAM division and University of Miami-owned land that is cooperatively managed with Fairchild. The EEL program's focus is on the "protection and conservation of endangered lands," and these EEL areas are managed for restoration and conservation through actions such as invasive plant removal. In addition, State, County, and private partners have shown interest in reintroduction efforts for the Florida bristle fern in this area.

SF 3—Charles Deering Estate Hammock

We identified this area as essential for the conservation of the Florida bristle fern. SF 3 consists of approximately 43 ha (106 ac) of habitat in the Charles Deering Estate in Miami-Dade County, Florida. This unit is composed of State-owned land that is primarily managed cooperatively by Miami-Dade County's EEL program and NAM division. Charles Deering Estate Hammock is within the historical range of Florida bristle fern but was not occupied by the subspecies at the time of listing.

Although it is currently considered unoccupied, Florida bristle fern was documented here in the past (80 FR 60440; October 6, 2015), and it is possible that the site still contains the fern's gametophytes (the very cryptic reproductive stage of the fern) (Possley 2020, pers. comm.) that

could develop into sporophytes (the recognizable mature plant) under the proper conditions (80 FR 60440; October 6, 2015). Also, this unit contains all of the physical or biological features essential to the conservation of the subspecies. Based upon the presence of key habitat needs and the conditions of the site, this unit constitutes habitat for the Florida bristle fern.

This unit will serve to protect habitat needed to recover the subspecies and reestablish wild populations within the historical range in Miami-Dade County. Re-establishing a population in this unit would increase the subspecies' redundancy in the South Florida metapopulation. It will also provide habitat for recolonization in the case of stochastic events (such as hurricanes), should other areas of suitable habitat be destroyed, or should Florida bristle fern be extirpated from one of its currently occupied locations. This unit is essential for the conservation of the subspecies because it will provide habitat for range expansion in known historical habitat that is necessary to increase viability of the subspecies by increasing its resiliency, redundancy, and representation.

We are reasonably certain that this unit will contribute to the conservation of the subspecies because the need for conservation efforts is recognized and is being discussed by our conservation partners, and methods for reintroducing the subspecies are being developed for this unit. As stated previously, this unit is composed entirely of State-owned land and is primarily managed cooperatively by Miami-Dade County's EEL program and NAM division. The EEL program's focus is on the "protection and conservation of endangered lands," and these EEL areas are managed for restoration and conservation through actions such as invasive plant removal. In addition, State and County partners have shown interest in reintroduction efforts for the Florida bristle fern in this area.

SF 4—Castellow and Ross Hammocks

SF 4 consists of approximately 56 ha (139 ac) of habitat in Castellow and Ross Hammocks in and around Castellow Hammock Preserve in Miami-Dade County, Florida. This unit consists of 17.5 ha (43.3 ac) of State-owned and 25.6 ha (63.4 ac) of County-owned lands

that are primarily managed cooperatively by Miami-Dade County's EEL program and NAM division. The remaining 13 ha (32.3 ac) are privately owned and managed by the landowners through the EEL Covenant Program and/or are protected from development through Miami-Dade County's designation as Natural Forest Communities. This unit is occupied by the subspecies and contains some or all of the physical or biological features essential to its conservation.

Special management considerations or protection may be required to address threats of commercial, residential, or agricultural development; hydrological alterations; competition with nonnative species; human use and recreation; and sea level rise. In some cases, these threats are being addressed or coordinated with our partners and landowners to implement needed actions. Such actions include removal of invasive species, review of County development plans, and review of projects considering land use changes.

SF 5—Silver Palm Hammock

We identified this area as essential for the conservation of the subspecies. SF 5 consists of approximately 4 ha (10 ac) of habitat in Silver Palm Hammock in Miami-Dade County, Florida. This unit consists of State-owned land that is primarily managed cooperatively by Miami-Dade County's EEL program and NAM division. Silver Palm Hammock is within the historical range of Florida bristle fern but was not occupied by the subspecies at the time of listing.

Although it is currently considered unoccupied, Florida bristle fern was documented here in the past (80 FR 60440; October 6, 2015), and it is possible that the site still contains the fern's gametophytes (the very cryptic reproductive stage of the fern) (Possley 2020, pers. comm.) that could develop into sporophytes (the recognizable mature plant) under the proper conditions (80 FR 60440; October 6, 2015). Also, this unit contains some or all of the physical or biological features essential to the conservation of the subspecies. Unit SF 5 possesses those characteristics as described by the first identified physical or biological feature (upland hardwood forest

hammock habitats of sufficient quality and size to sustain the necessary microclimate and life processes for Florida bristle fern); the second identified physical or biological feature (exposed substrate derived from oolitic limestone, Ocala limestone, or exposed limestone boulders, which provide anchoring and nutritional requirements); the third identified physical or biological feature (constantly humid microhabitat consisting of dense canopy cover, moisture, stable high temperature, and stable monthly average humidity of 90 percent or higher, with intact hydrology within hammocks and the surrounding and adjacent wetland communities); the fourth identified physical or biological feature (dense canopy cover of surrounding native vegetation that consists of the upland hardwood forest hammock habitats and provides shade, shelter, and moisture); and the fifth identified physical or biological feature (suitable microhabitat conditions, hydrology, and connectivity that can support Florida bristle fern's growth, distribution, and population expansion (including rhizomal growth, spore dispersal, and sporophyte and gametophyte growth and survival)). The sixth identified physical or biological feature is degraded in this unit, but with appropriate management and restoration actions (such as removal of invasive plant species), this feature can be restored. Based upon the presence of key habitat needs and the conditions of the site, this unit constitutes habitat for the Florida bristle fern.

This unit will serve to protect habitat needed to recover the subspecies and reestablish wild populations within the historical range in Miami-Dade County. Re-establishing a population in this unit would increase the subspecies' redundancy in the South Florida metapopulation. It will also provide habitat for recolonization in the case of stochastic events (such as hurricanes), should other areas of suitable habitat be destroyed, or should Florida bristle fern be extirpated from one of its currently occupied locations. This unit is essential for the conservation of the subspecies because it will provide habitat for range expansion in known historical habitat that is necessary to increase viability of the subspecies by increasing its resiliency, redundancy, and representation.

We are reasonably certain that this unit will contribute to the conservation of the

subspecies because the need for conservation efforts is recognized and is being discussed by our conservation partners, and methods for restoring habitat are being developed for this unit. As stated previously, this unit is entirely composed of State-owned land and is primarily managed cooperatively by Miami-Dade County's EEL program and NAM division. The EEL program's focus is on the "protection and conservation of endangered lands," and these EEL areas are managed for restoration and conservation through actions such as invasive plant removal. In addition, State and County partners have shown interest in reintroduction efforts for the Florida bristle fern in this area.

SF 6—Hattie Bauer Hammock

SF 6 consists of approximately 6 ha (16 ac) of habitat in Hattie Bauer Hammock in and around Hattie Bauer Hammock Preserve in Miami-Dade County, Florida. This unit consists of 4 ha (10 ac) of County-owned land that is primarily managed cooperatively by Miami-Dade County's EEL program and NAM division. The remaining 2 ha (6 ac) are privately owned and managed by the landowners through the EEL Covenant Program and/or are protected from development through Miami-Dade County's designation as Natural Forest Communities. This unit is occupied by the subspecies and contains some or all of the physical or biological features essential to its conservation.

Special management considerations or protection may be required to address threats of commercial, residential, or agricultural development; hydrological alterations; competition with nonnative species; human use and recreation; and sea level rise. In some cases, these threats are being addressed or coordinated with our partners and landowners to implement needed actions. Such actions include removal of invasive species, review of County development plans, and review of projects considering land use changes.

SF 7—Fuchs and Meissner Hammocks

SF 7 consists of approximately 10 ha (25 ac) of habitat in Fuchs and Meissner Hammocks in and around Fuchs and Meissner Hammock Preserves in Miami-Dade County,

Florida. This unit consists of 2 ha (5 ac) of State-owned and 7.6 ha (19 ac) of County-owned lands that are primarily managed cooperatively by Miami-Dade County's EEL program and NAM division. The remaining 0.4 ha (1 ac) are privately owned and managed by the landowners through the EEL Covenant Program and/or are protected from development through Miami-Dade County's designation as Natural Forest Communities. This unit is occupied by the subspecies and contains some or all of the physical or biological features essential to its conservation.

Special management considerations or protection may be required to address threats of commercial, residential, or agricultural development; hydrological alterations; competition with nonnative species; human use and recreation; and sea level rise. In some cases, these threats are being addressed or coordinated with our partners and landowners to implement needed actions. Such actions include removal of invasive species, review of County development plans, and review of projects considering land use changes.

SF 8—Royal Palm Hammock

We identified this area as essential for the conservation of the subspecies. SF 8 consists of approximately 61 ha (150 ac) of habitat in Royal Palm Hammock in Everglades National Park, which is federally owned land, in Miami-Dade County, Florida. Royal Palm Hammock is within the historical range of Florida bristle fern but was not occupied by the subspecies at the time of listing.

Although it is currently considered unoccupied, Florida bristle fern was documented here in the past (80 FR 60440; October 6, 2015), and it is possible that the site still contains the fern's gametophytes (the very cryptic reproductive stage of the fern) (Possley 2020, pers. comm.) that could develop into sporophytes (the recognizable mature plant) under the proper conditions (80 FR 60440; October 6, 2015). Also, this unit contains all of the physical or biological features essential to the conservation of the subspecies. Based upon the presence of key habitat needs and the conditions of the site, this unit constitutes habitat for the Florida bristle fern.

This unit will serve to protect habitat needed to recover the subspecies and reestablish wild populations within the historical range in Miami-Dade County. Re-establishing a population in this unit would increase the subspecies' redundancy in the South Florida metapopulation. It will also provide habitat for recolonization in the case of stochastic events (such as hurricanes), should other areas of suitable habitat be destroyed, or should Florida bristle fern be extirpated from one of its currently occupied locations. This unit is essential for the conservation of the subspecies because it will provide habitat for range expansion in known historical habitat that is necessary to increase viability of the subspecies by increasing its resiliency, redundancy, and representation.

We are reasonably certain that this unit will contribute to the conservation of the subspecies because the need for conservation efforts is recognized and is being discussed by our conservation partners, and habitat maintenance in this unit is ongoing. This unit is entirely composed of federally owned Everglades National Park land, and the National Park Service has responsibilities under section 7(a)(1) of the Act to carry out programs for the conservation of federally listed endangered and threatened species. The Everglades National Park General Management Plan (Plan), approved in 2015, prior to the published final listing rule for Florida bristle fern, guides the National Park Service's management of Everglades National Park, including conservation of endangered and threatened species. The 2015 Plan identifies the Florida bristle fern as extirpated from Everglades National Park (Royal Palm Hammock), and, therefore, specific conservation measures were not discussed for the subspecies (National Park Service 2015, p. 226). However, Everglades National Park continues to conduct nonnative plant species control in Royal Palm Hammock, which helps maintain the physical or biological features essential to the conservation of the Florida bristle fern.

*Withlacoochee State Forest, Jumper Creek Tract, and Adjacent Lands of Central Florida, Sumter County*

The designated critical habitat for the central Florida metapopulation is composed of two

units (CF 1 and CF 2) consisting of approximately 1,489 ha (3,680 ac) located within and adjacent to the Jumper Creek Tract of the Withlacoochee State Forest in Sumter County, Florida.

CF 1

CF 1 consists of approximately 742 ha (1,834 ac) of habitat in Sumter County, Florida. This unit consists of 726 ha (1,795 ac) of State-owned land within the Jumper Creek Tract of the Withlacoochee State Forest and 16 ha (39 ac) of privately owned land directly adjacent to the two locations where Florida bristle fern is currently observed. The State-owned land is managed by the Florida Forest Service. This unit is occupied by the subspecies and contains all of the physical or biological features essential to its conservation.

Special management considerations or protection may be required to address threats of residential and agricultural development, land clearing, logging, cattle grazing, hydrological alteration, competition with nonnative species, human use and recreation, and impacts related to climate change. In some cases, these threats are being addressed or coordinated with our partners and landowners to implement needed actions.

CF 2

We identified this area as essential for the conservation of the subspecies. CF 2 consists of approximately 747 ha (1,846 ac) of habitat on State-owned land within the Jumper Creek Tract of the Withlacoochee State Forest, Sumter County, Florida. This is within the historical range of Florida bristle fern but was not occupied by the subspecies at the time of listing.

Although it is currently considered unoccupied, Florida bristle fern was documented here in the past (80 FR 60440; October 6, 2015), and it is possible that the site still contains the fern's gametophytes (the very cryptic reproductive stage of the fern) (Possley 2020, pers. comm.) that could develop into sporophytes (the recognizable mature plant) under the proper conditions (80 FR 60440; October 6, 2015). Also, this unit contains all of the physical or biological features essential to the conservation of the subspecies. Based upon the presence of key habitat needs and the conditions of the site, this unit constitutes habitat for the Florida bristle fern.

This unit will serve to protect habitat needed to recover the subspecies and reestablish wild populations within the historical range in Sumter County. Re-establishing at least one historical population in this unit would increase the subspecies' redundancy in the Central Florida metapopulation. It will also provide habitat for recolonization in the case of stochastic events (such as hurricanes), should other areas of suitable habitat be destroyed, or should Florida bristle fern be extirpated from one of its currently occupied locations. This unit is essential for the conservation of the subspecies because it will provide habitat for range expansion in known historical habitat that is necessary to increase viability of the subspecies by increasing its resiliency, redundancy, and representation.

We are reasonably certain that this unit will contribute to the conservation of the subspecies because the need for conservation efforts is recognized and is being discussed by our conservation partners, and habitat maintenance in this unit is ongoing. This unit is entirely composed of State-owned land that is part of the Withlacoochee State Forest. The Ten-Year Resource Management Plan for the Withlacoochee State Forest (Management Plan), approved in 2015, prior to the published final listing rule for Florida bristle fern, guides the Florida Forest Service's management, including protection of endangered and threatened species found on the Withlacoochee State Forest. The Management Plan lists the Florida bristle fern as occurring in the Forest, but specific conservation measures are not discussed for the subspecies. However, the Withlacoochee State Forest conducts nonnative species control (Florida Department of Agriculture and Consumer Services 2015, p. 34), which helps maintain the physical or biological features essential to the conservation of Florida bristle fern. The Florida Forest Service has shown interest in reintroduction efforts for Florida bristle fern in this area.

**Effects of Critical Habitat Designation**

*Section 7 Consultation*

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of

any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species.

We published a final rule revising the definition of destruction or adverse modification on August 27, 2019 (84 FR 44976). Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq*.) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal agency actions within the subspecies' habitat that may require consultation include management and any other landscape-altering activities on Federal lands administered by the Service, Army National Guard, U.S. Forest Service, and National Park Service; issuance of section 404 Clean Water Act permits by the U.S. Army Corps of Engineers; and construction and maintenance of roads or highways by the Federal Highway Administration. Federal actions not affecting listed species or critical habitat, and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency, do not require section 7 consultation.

Compliance with the requirements of section 7(a)(2) is documented through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, and are likely to adversely

affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define "reasonable and prudent alternatives" (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action,

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,

(3) Are economically and technologically feasible, and

(4) Would, in the Service Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 set forth requirements for Federal agencies to reinitiate formal consultation on previously reviewed actions. These requirements apply when the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law) and, subsequent to the previous consultation: (1) if the amount or extent of taking specified in the incidental take statement is exceeded; (2) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (4) if a new species is listed or critical

habitat designated that may be affected by the identified action.

In such situations, Federal agencies sometimes may need to request reinitiation of consultation with us, but the regulations also specify some exceptions to the requirement to reinitiate consultation on specific land management plans after subsequently listing a new species or designating new critical habitat. See the regulations for a description of those exceptions.

*Application of the "Destruction or Adverse Modification" Standard*

The key factor related to the destruction or adverse modification determination is whether implementation of the proposed Federal action directly or indirectly alters the designated critical habitat in a way that appreciably diminishes the value of the critical habitat as a whole for the conservation of the listed species. As discussed above, the role of critical habitat is to support physical or biological features essential to the conservation of a listed species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may violate section 7(a)(2) of the Act by destroying or adversely modifying such designation, or that may be affected by such designation.

Activities that we may, during a consultation under section 7(a)(2) of the Act, consider likely to destroy or adversely modify critical habitat include, but are not limited to:

(1) Actions that would significantly alter native vegetation structure or composition within the upland hardwood forest hammock habitat consisting of rockland or closed tropical hardwood hammock (south Florida) or mesic, hydric, or intermixed hammock strands (central Florida) ecosystems as defined as a physical or biological feature essential to the conservation of the Florida bristle fern in the designated critical habitat. Such activities could include, but are not limited to, land conversion or clearing related to residential, commercial, agricultural, or recreational development, including associated infrastructure; logging; introduction of nonnative

plant species; or improper fire management. These activities could result in loss, modification, and fragmentation of rockland/mesic hammock habitat, thereby eliminating or reducing the habitat necessary for the growth and reproduction of the subspecies.

(2) Actions that would significantly alter microhabitat for Florida bristle fern within the rockland or closed tropical hardwood hammock (in south Florida) or mesic, hydric, or intermixed hammock strands (in central Florida) ecosystems, including significant alterations to the substrate within the rockland/mesic-hydric hammocks or to the canopy or hydrology within the rockland/mesic-hydric hammocks or surrounding upland hardwood forest vegetation as identified as a physical or biological feature essential to the conservation of the Florida bristle fern in the designated critical habitat. Such activities could include, but are not limited to, residential, commercial, agricultural, or recreational development, including associated infrastructure; land conversion or clearing; logging; introduction of nonnative species, including invasive plants or feral hogs; ground or surface water withdrawals; and ditching. These activities could result in changes to temperature, humidity, light, and existing water levels, thereby eliminating or reducing the microhabitat necessary for the growth and reproduction of the subspecies.

(3) Actions that would significantly alter the hydrology of the upland forested hammock ecosystems as defined as a physical or biological feature essential to the conservation of the Florida bristle fern in the designated critical habitat, including significant alterations to the hydrology of surrounding wetland habitat and the underlying water table. Such activities could include, but are not limited to, regional drainage efforts, ground or surface water withdrawals, and ditching. These activities could result in changes to existing water levels and humidity levels within the hammocks, thereby eliminating or reducing the habitat necessary for the growth and reproduction of the subspecies.

**Exemptions**

*Application of Section 4(a)(3) of the Act*

Section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) provides that the Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense (DoD), or designated for its use, that are subject to an integrated natural resources management plan (INRMP) prepared under section 101 of the Sikes Act Improvement Act of 1997 (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation. There are no DoD lands with a completed INRMP within the final critical habitat designation.

**Consideration of Impacts under Section 4(b)(2) of the Act**

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if she determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless she determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making the determination to exclude a particular area, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

The first sentence in section 4(b)(2) of the Act requires that we take into consideration the economic, national security, or other relevant impacts of designating any particular area as critical habitat. We describe below the process that we undertook for taking into consideration each category of impacts and our analyses of the relevant impacts.

On December 18, 2020, we published a final rule in the **Federal Register** (85 FR 82376) revising portions of our regulations pertaining to exclusions of critical habitat. These final regulations became effective on January 19, 2021, and applied to critical habitat rules for which a proposed rule was published after January 19, 2021. Consequently, these new regulations do

not apply to this final rule because the rule proposing critical habitat for Florida bristle fern published on February 24, 2020. In addition, this regulation was rescinded (87 FR 43433; July 21, 2022) and no longer applies to any designations of critical habitat. Therefore, for this final rule designating critical habitat for the Florida bristle fern, we apply the regulations at 424.19 and the 2016 Joint Policy on 4(b)(2) exclusions (81 FR 7226; February 11, 2016).

*Exclusions Based on Economic Impacts*

Section 4(b)(2) of the Act and its implementing regulations require that we consider the economic impact that may result from a designation of critical habitat. In order to consider economic impacts, we prepared an incremental effects memorandum (IEM) and screening analysis which, together with our narrative and interpretation of effects, we consider our economic analysis of the critical habitat designation and related factors (IEc 2020, entire). The analysis, dated January 30, 2020, was made available for public review from February 24, 2020, through April 24, 2020 (85 FR 10371). The economic analysis addressed probable economic impacts of critical habitat designation for Florida bristle fern. Following the close of the comment period, we reviewed and evaluated all information submitted during the comment period that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Additional information relevant to the probable incremental economic impacts of critical habitat designation for the Florida bristle fern is summarized below and available in the screening analysis for the species (IEc 2020, entire), available at *https://www.regulations.gov* under Docket No. FWS-R4-ES-2019-0068 or by contacting the Florida Ecological Services Field Office, Vero Beach (see **ADDRESSES**).

We did not receive any public comments on the DEA. Based on peer review comments and changes that we made to the critical habitat units (see **Summary of Changes from the Proposed Rule**, above), the IEM was revised to reflect the areas added to the final critical habitat designation. Due to the small amount of area added to the final critical habitat designation, it was determined that the screening analysis did not need to be revised.

In our evaluation of the probable incremental economic impacts that may result from the designation of critical habitat for Florida bristle fern, first we identified, in the IEM dated April 2021, probable incremental economic impacts associated with the following categories of activities: (1) Commercial or residential development; (2) roadway and bridge construction; (3) utility-related activities; (4) agriculture, including land clearing; (5) grazing; (6) groundwater pumping; (7) surface water withdrawals and diversions; (8) forest management; (9) fire management; (10) conservation and restoration activities, including nonnative species control; and (11) recreation. Additionally, we considered whether the activities have any Federal involvement. Critical habitat designation generally will not affect activities that do not have any Federal involvement; under the Act, designation of critical habitat only affects activities conducted, funded, permitted, or authorized by Federal agencies. In areas where Florida bristle fern is present, Federal agencies already are required to consult with the Service under section 7 of the Act on activities they fund, permit, or implement that may affect the subspecies. When this final critical habitat designation rule becomes effective, consultations to avoid the destruction or adverse modification of critical habitat will be incorporated into the existing consultation process.

In our IEM, we attempted to clarify the distinction between the effects that will result from the subspecies being listed and those attributable to the critical habitat designation (*i.e.*, the difference between the jeopardy and adverse modification standards) for Florida bristle fern. The following considerations helped to inform our evaluation: (1) The essential physical or biological features identified for critical habitat are the same features essential for the life requisites of the subspecies, and (2) any actions that would result in sufficient harm or harassment to constitute jeopardy to Florida bristle fern would also likely adversely affect the essential physical or biological features of critical habitat. The IEM outlines our rationale concerning this limited distinction between baseline conservation efforts and incremental impacts of the designation of critical habitat for this subspecies. This evaluation of the incremental effects has been used as the

basis to evaluate the probable incremental economic impacts of this designation.

The final critical habitat designation for Florida bristle fern totals approximately 1,698 ha (4,195 ac) in Miami-Dade and Sumter Counties, Florida, and includes both occupied and unoccupied units. Within the occupied units, any actions that may affect critical habitat would also affect the subspecies, and it is unlikely that any additional conservation efforts would be recommended to address the adverse modification standard over and above those recommended as necessary to avoid jeopardizing the continued existence of Florida bristle fern. Therefore, the economic impacts of implementing the rule through section 7 of the Act will most likely be limited to additional administrative effort to consider adverse modification.

Within the unoccupied units, incremental section 7 costs will include both the administrative costs of consultation and the costs of developing and implementing conservation measures needed to avoid adverse modification of critical habitat. Therefore, this analysis focuses on the likely impacts to activities occurring in unoccupied units of the final critical habitat designation. This analysis considers the potential need to consult on development, transportation, and other activities authorized, undertaken, or funded by Federal agencies within unoccupied habitat. The total annual incremental section 7 costs associated with the designation were estimated to be $210,000 in 2019 dollars (IEC 2020, p. 12). The increase in size of the unoccupied units from the proposed to the final critical habitat designation is minor (52 ha (129 ac)) and is not anticipated to significantly increase the annual incremental section 7 costs associated with the designation. Accordingly, we conclude that these costs will not reach the threshold of "significant" under E.O. 12866.

We considered the economic impacts of the critical habitat designation. The Secretary is not exercising her discretion to exclude any areas from this designation of critical habitat for the Florida bristle fern based on economic impacts.

*Exclusions Based on Impacts on National Security and Homeland Security*

In preparing this rule, we have determined that the lands within the final designation of critical habitat for the Florida bristle fern are not owned or managed by the DoD or Department of Homeland Security, and, therefore, we anticipate no impact on national security or homeland security. We did not receive any additional information during the public comment period for the proposed designation regarding impacts of the designation on national security or homeland security that would support excluding any specific areas from the final critical habitat designation under authority of section 4(b)(2) and our implementing regulations at 50 CFR 424.19. Consequently, the Secretary is not exercising her discretion to exclude any areas from the final designation based on impacts on national security.

*Exclusions Based on Other Relevant Impacts*

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security as discussed above. We consider a number of factors, including whether there are permitted conservation plans covering the species in the area such as habitat conservation plans (HCPs), safe harbor agreements, or candidate conservation agreements with assurances, or whether there are non-permitted conservation agreements and partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at the existence of Tribal conservation plans and partnerships and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur because of the designation.

In preparing this final rule, we have determined that there are currently no HCPs or other management plans for Florida bristle fern, and the designation does not include any Tribal lands or trust resources. We anticipate no impact on Tribal lands, partnerships, HCPs, or permitted or non-permitted plans or agreements from this critical habitat designation. We did not receive any additional information during the public comment period for the proposed rule regarding other relevant impacts to support excluding any specific areas from the final critical habitat designation under authority of section 4(b)(2) and our implementing regulations at 50 CFR

424.19. Accordingly, the Secretary is not exercising her discretion to exclude any areas from the final designation based on other relevant impacts.

**Required Determinations**

*Regulatory Planning and Review (Executive Orders 12866 and 13563)*

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB) will review all significant rules. OIRA has determined that this rule is not significant.

Executive Order (E.O.) 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

*Regulatory Flexibility Act (5 U.S.C. 601 et seq.)*

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq*.), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; 5 U.S.C. 801 *et seq.*), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (*i.e*., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide

a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and agricultural businesses with annual sales less than $750,000. To determine whether potential economic impacts to these small entities are significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term "significant economic impact" is meant to apply to a typical small business firm's business operations.

Under the RFA, as amended, and as understood in light of recent court decisions, Federal agencies are required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself; in other words, the RFA does not require agencies to evaluate the potential impacts to indirectly regulated entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried out by the agency is not likely to destroy or adversely modify critical habitat. Therefore, under section 7, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Consequently, it is our position that only Federal action agencies will be directly regulated by this designation. There is no requirement under the RFA to evaluate the

potential impacts to entities not directly regulated. Moreover, Federal agencies are not small entities.

During the development of this final rule, we reviewed and evaluated all information submitted during the comment period that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Based on this information, we affirm our certification that this final critical habitat designation will not have a significant economic impact on a substantial number of small entities, and a regulatory flexibility analysis is not required.

*Energy Supply, Distribution, or Use—Executive Order 13211*

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. OMB has provided guidance for implementing this E.O. that outlines nine outcomes that may constitute "a significant adverse effect" when compared to not taking the regulatory action under consideration. Our economic analysis finds that none of these criteria is relevant to this analysis. Thus, based on information in the economic analysis, energy-related impacts associated with Florida bristle fern conservation activities within critical habitat are not expected. As such, the designation of critical habitat is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

*Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)*

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq*.), we make the following findings:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both "Federal intergovernmental mandates" and "Federal private sector mandates." These terms are defined in 2 U.S.C. 658(5)–

(7). “Federal intergovernmental mandate” includes a regulation that “would impose an enforceable duty upon State, local, or tribal governments” with two exceptions. It excludes “a condition of Federal assistance.” It also excludes “a duty arising from participation in a voluntary Federal program,” unless the regulation “relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and tribal governments under entitlement authority,” if the provision would “increase the stringency of conditions of assistance” or “place caps upon, or otherwise decrease, the Federal Government’s responsibility to provide funding,” and the State, local, or tribal governments “lack authority” to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. “Federal private sector mandate” includes a regulation that “would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.”

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not believe that this rule will significantly or uniquely affect small governments because it will not produce a Federal mandate of $100 million or greater in any year; that is, it is not a "significant regulatory action" under the Unfunded Mandates Reform Act. The economic analysis concludes that incremental impacts may primarily occur due to administrative costs of section 7 consultations for development and transportation projects, and for other activities primarily related to land and facility management, cultural resource, research, and conservation activities in Everglades National Park; however, these are not expected to significantly affect small governments. Incremental impacts stemming from various species conservation and development control activities are expected to be borne by the Federal Government, State of Florida, and Miami-Dade County, which are not considered small governments. Consequently, we do not believe that the critical habitat designation will significantly or uniquely affect small government entities. As such, a Small Government Agency Plan is not required.

*Takings—Executive Order 12630*

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for Florida bristle fern in a takings implications assessment. The Act does not authorize us to regulate private actions on private lands or confiscate private property as a result of critical habitat designation. Designation of critical habitat does not affect land ownership, or establish any closures, or restrictions on use of or access to the designated areas. Furthermore, the designation of critical habitat does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. However, Federal agencies are prohibited from carrying out, funding, or authorizing actions that would destroy or adversely modify critical habitat. A takings implications assessment has been completed and concludes that

this designation of critical habitat for Florida bristle fern does not pose significant takings implications for lands within or affected by the designation.

*Federalism—Executive Order 13132*

In accordance with E.O. 13132 (Federalism), this rule does not have significant Federalism effects. A federalism summary impact statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of this critical habitat designation with, the appropriate State resource agencies in Florida. We did not receive comments from the State of Florida. From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, the rule does not have substantial direct effects either on the States, or on the relationship between the national government and the States, or on the distribution of powers and responsibilities among the various levels of government. The designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the subspecies are more clearly defined, and the physical or biological features of the habitat necessary to the conservation of the subspecies are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist State and local governments in long-range planning because they no longer have to wait for case-by-case section 7 consultations to occur.

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) will be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

*Civil Justice Reform—Executive Order 12988*

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the subspecies, this rule identifies the physical or biological features essential to the conservation of the subspecies. The designated areas of critical habitat are presented on maps, and the rule provides several options for the interested public to obtain more detailed location information, if desired.

*Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)*

This rule does not contain information collection requirements, and a submission to the OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*) is not required. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

*National Environmental Policy Act (42 U.S.C. 4321 et seq.)*

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

*Government-to-Government Relationship with Tribes*

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to

communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. As discussed above (see *Exclusions Based on Other Relevant Impacts*), we have determined that no Tribal lands will be affected by this designation.

**References Cited**

A complete list of references cited in this rule is available on the internet at *https://www.regulations.gov* under Docket No. FWS-R4-ES-2019-0068 and upon request from the Florida Ecological Services Field Office, Vero Beach (see **FOR FURTHER INFORMATION CONTACT**).

**Authors**

The primary authors of this rule are the staff members of the U.S. Fish and Wildlife Service, Florida Ecological Services Field Office

**List of Subjects in 50 CFR Part 17**

Endangered and threatened species, Exports, Imports, Plants, Reporting and recordkeeping requirements, Transportation, Wildlife.

**Regulation Promulgation**

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

**PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS**

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. Amend § 17.12(h) in the List of Endangered and Threatened Plants under FERNS AND

ALLIES by removing the entry for "*Trichomanes punctatum*ssp. *floridanum*" and adding in its place an entry for "*Trichomanes punctatum* ssp. *floridanum*" to read as follows:

**§ 17.12 Endangered and threatened plants.**

* * * * *

(h) * * *

| Scientific name | Common name | Where listed | Status | Listing citations and applicable rules |
|---|---|---|---|---|
| * * * * * * * | | | | |
| FERNS and ALLIES | | | | |
| * * * * * * * | | | | |
| *Trichomanes punctatum* ssp. *floridanum* | Florida bristle fern | Wherever found | E | 80 FR 60440, 10/6/2015; 50 CFR 17.96(b)(1).[CH] |
| * * * * * * * | | | | |

3. Amend § 17.96 by adding paragraph (b) to read as follows:

**§ 17.96 Critical habitat—plants.**

* * * * *

(b) *Conifers, ferns and allies, and lichens.* (1) Family Hymenophyllaceae: *Trichomanes punctatum* ssp. *floridanum* (Florida bristle fern).

(i) Critical habitat units are depicted for Miami-Dade and Sumter Counties, Florida, on the maps in this entry.

(ii) Within these areas, the physical or biological features essential to the conservation of Florida bristle fern consist of the following components:

(A) Upland hardwood forest hammock habitats of sufficient quality and size to sustain the necessary microclimate and life processes for Florida bristle fern.

(B) Exposed substrate derived from oolitic limestone, Ocala limestone, or exposed limestone boulders, which provide anchoring and nutritional requirements.

(C) Constantly humid microhabitat consisting of dense canopy cover, moisture, stable high temperature, and stable monthly average humidity of 90 percent or higher, with intact hydrology within hammocks and the surrounding and adjacent wetland communities.

(D) Dense canopy cover of surrounding native vegetation that consists of the upland hardwood forest hammock habitats and provides shade, shelter, and moisture.

(E) Suitable microhabitat conditions, hydrology, and connectivity that can support Florida bristle fern's growth, distribution, and population expansion (including rhizomal growth, spore dispersal, and sporophyte and gametophyte growth and survival).

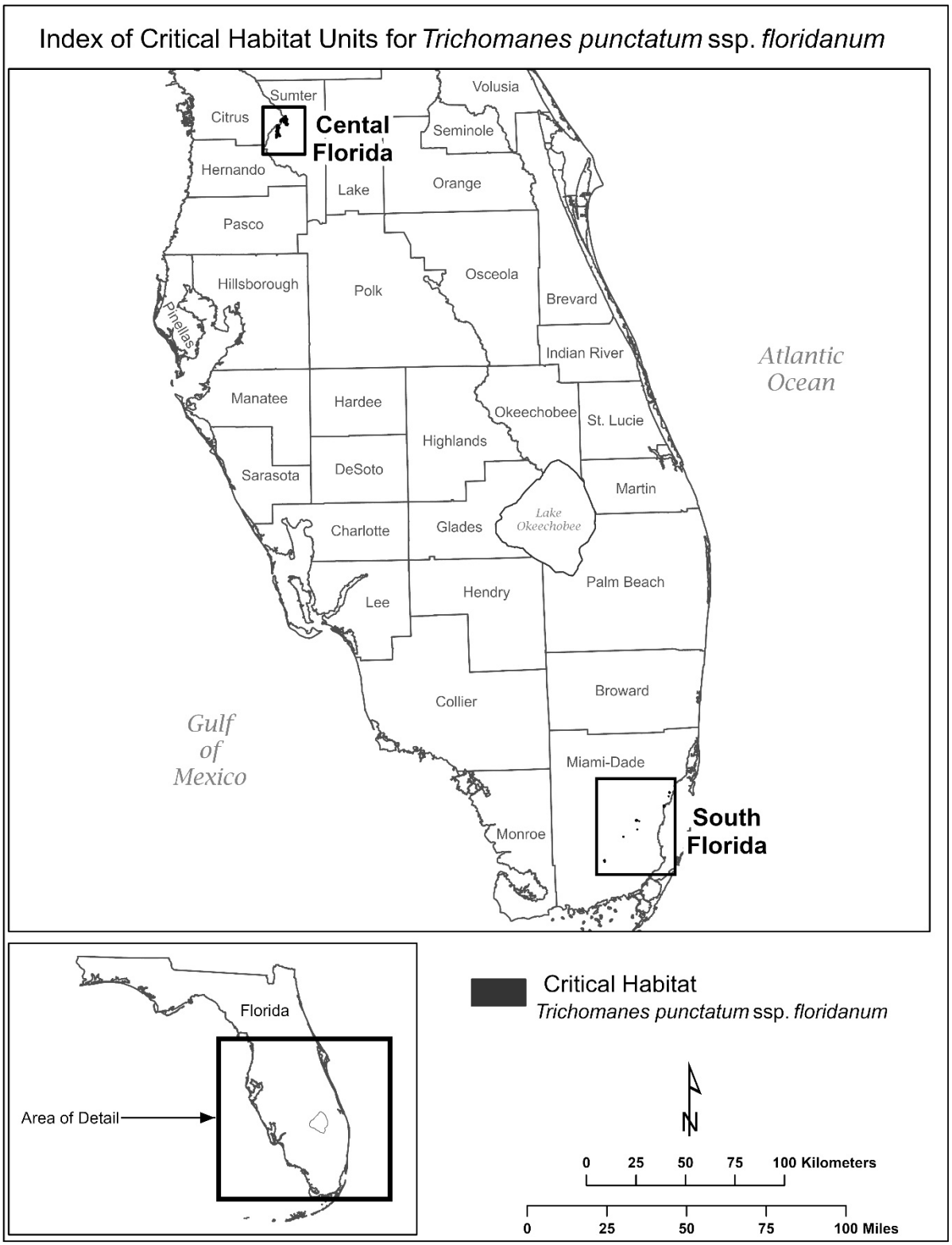
(F) Plant community of predominantly native vegetation that is minimally disturbed or free from human-related disturbance, with either no competitive nonnative, invasive plant species, or such species in quantities low enough to have minimal effect on Florida bristle fern.

(iii) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION].

(iv) Data layers defining map units were created using ESRI ArcGIS mapping software along with various spatial data layers. ArcGIS was used to calculate the size of habitat areas. The projection used in mapping and calculating distances and locations within the units was North American Albers Equal Area Conic, NAD 83 Geographic. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at *https://www.regulations.gov* under Docket No. FWS-R4-ES-2019-0068, *https://www.fws.gov/office/florida-ecological-services/library*, and at the Florida Ecological Services Field Office, Vero Beach. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(v) Index map follows:

**Figure 1 to Family Hymenophyllaceae: *Trichomanes punctatum* ssp. *floridanum* (Florida bristle fern) paragraph (b)(1)(v)**




(vi) SF 1—Matheson Hammock, SF 2—Snapper Creek Hammock, and SF 3—Charles Deering Estate Hammock, Miami-Dade County, Florida.

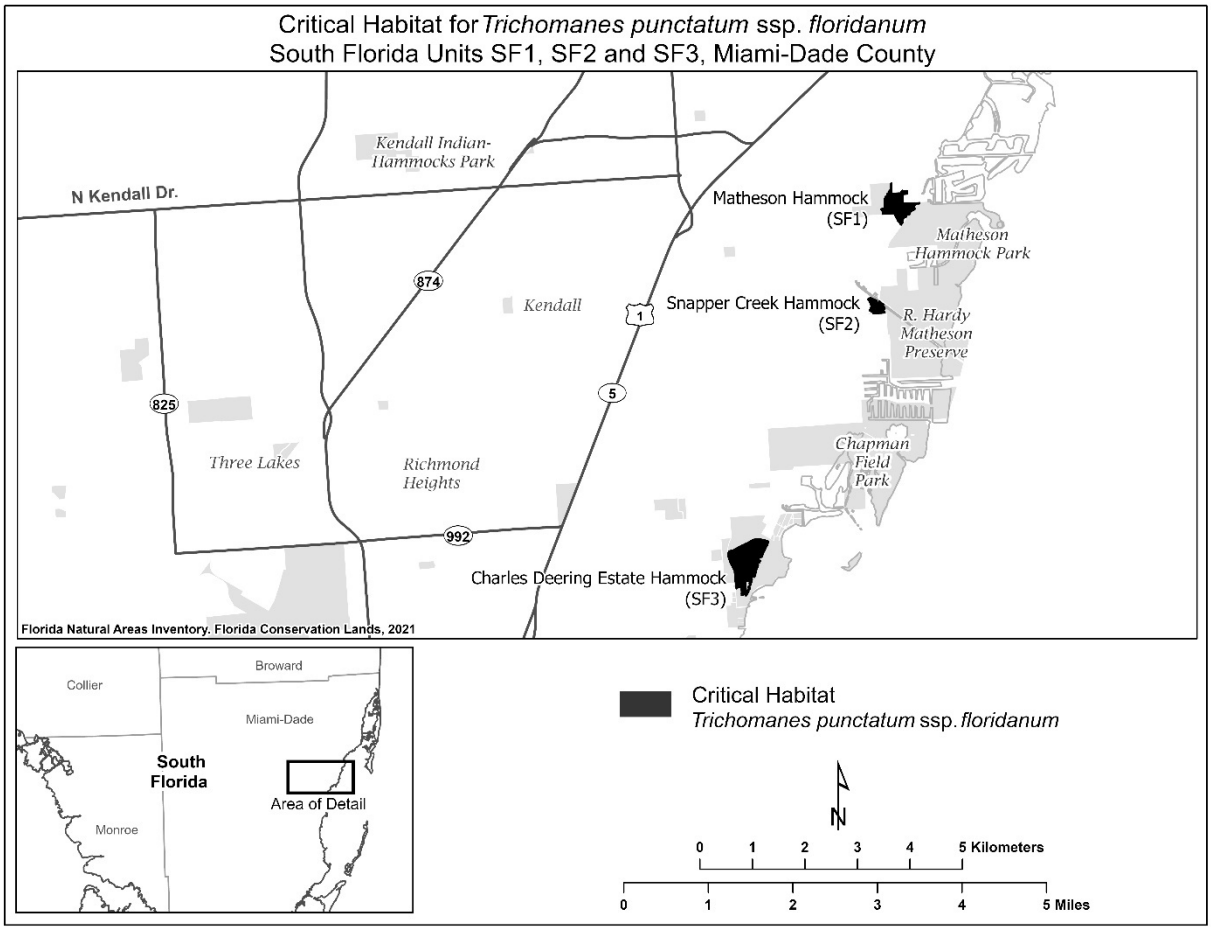
(A) SF 1 consists of approximately 22 hectares (ha) (55 acres (ac)) in Matheson Hammock in and around Matheson Hammock Park. This unit is composed of 20.6 ha (51.1 ac) of County-owned land that is primarily managed cooperatively by Miami-Dade County's Environmentally Endangered Lands (EEL) program and Natural Areas Management division. The remaining 1.5 ha (3.7 ac) are privately owned and managed by the landowners through the County's EEL Covenant Program and/or are protected from development through the County's designation as Natural Forest Communities.

(B) SF 2 consists of approximately 6 ha (15 ac) in Snapper Creek Hammock adjacent to R. Hardy Matheson Preserve. This unit consists of 3.2 ha (8 ac) of State-owned land that is primarily managed cooperatively by Miami-Dade County's EEL program and Natural Areas Management division and 2.8 ha (7 ac) of University of Miami-owned land that is managed in cooperation with Fairchild Tropical Botanical Gardens.

(C) SF 3 consists of approximately 43 ha (106 ac) in Charles Deering Estate. This unit is comprised of State-owned land that is primarily managed by the Miami-Dade County EEL program and Natural Areas Management division.

(D) Map of SF 1, SF 2, and SF 3 follows:

**Figure 2 to Family Hymenophyllaceae: *Trichomanes punctatum* ssp. *floridanum* (Florida bristle fern) paragraph (b)(1)(vi)(D)**




(vii) SF 4—Castellow and Ross Hammocks, SF 5—Silver Palm Hammock, SF 6—Hattie Bauer Hammock, and SF 7—Fuchs and Meissner Hammocks, Miami-Dade County, Florida.

(A) SF 4 consists of approximately 56 ha (139 ac) in Castellow and Ross Hammocks in and around Castellow Hammock Preserve. This unit consists of 17.5 ha (43.3 ac) of State-owned and 25.6 ha (63.4 ac) of County-owned lands that are primarily managed cooperatively by the Miami-Dade County EEL program and Natural Areas Management division. The remaining 13 ha (32.3 ac) are privately owned and managed by the landowners through the EEL Covenant Program and/or are protected from development through Miami-Dade County's designation as Natural Forest Communities.

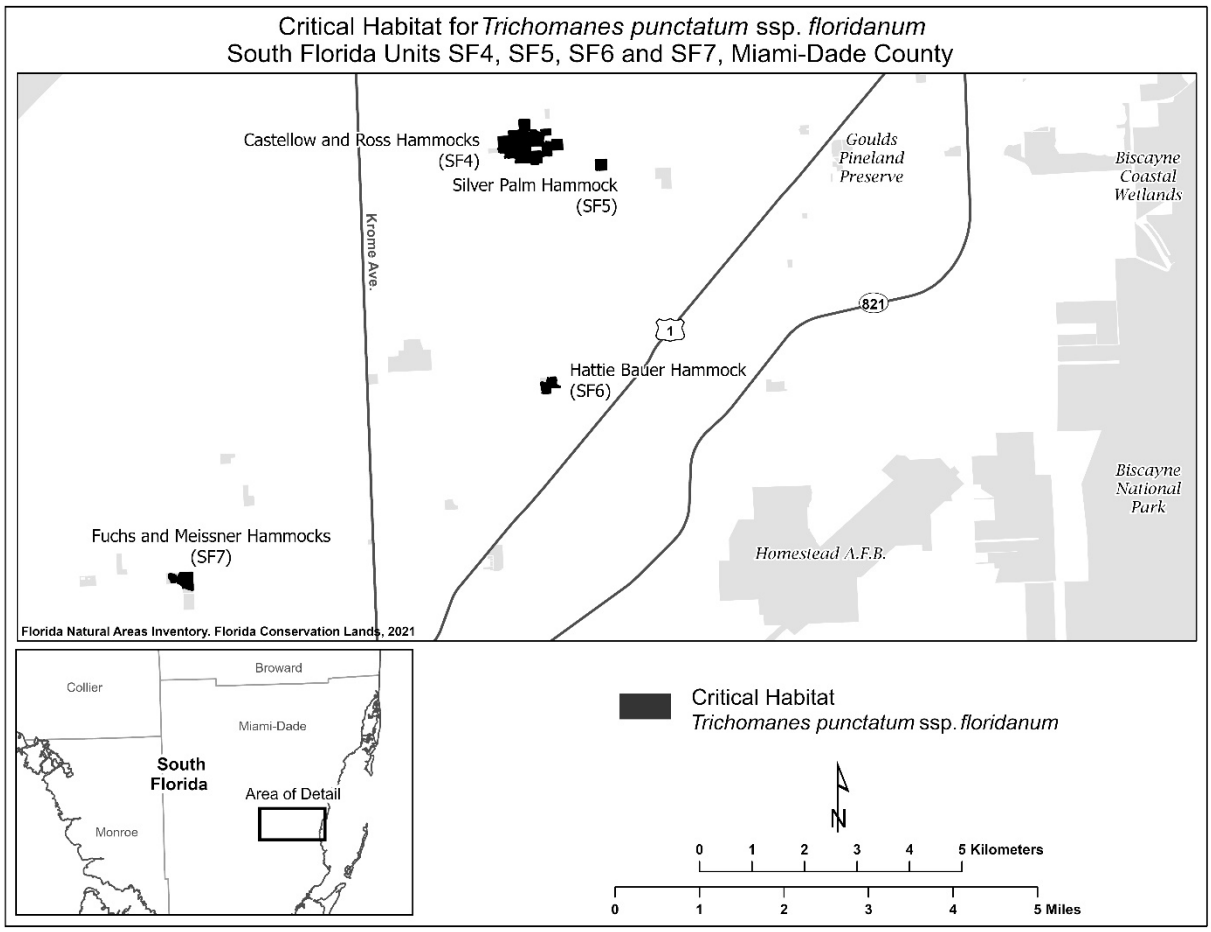
(B) SF 5 consists of approximately 4 ha (10 ac) in Silver Palm Hammock. This unit comprises State-owned land that is primarily managed cooperatively by the Miami-Dade County EEL program and Natural Areas Management division.

(C) SF 6 consists of approximately 6 ha (16 ac) in Hattie Bauer Hammock in and around Hattie Bauer Hammock Preserve. This unit consists of 4 ha (10 ac) of County-owned land that is primarily managed cooperatively by the Miami-Dade County EEL program and Natural Areas Management division. The remaining 2 ha (6 ac) are privately owned and managed by the landowners through the EEL Covenant Program and/or are protected from development through Miami-Dade County's designation as Natural Forest Communities.

(D) SF 7 consists of approximately 10 ha (25 ac) in Fuchs and Meissner Hammocks in and around Fuchs and Meissner Hammock Preserves. This unit consists of 2 ha (5 ac) of State-owned and 7.6 ha (19 ac) of County-owned lands that are primarily managed cooperatively by the Miami-Dade County EEL program and Natural Areas Management division. The remaining 0.4 ha (1 ac) are privately owned and managed by the landowners through the EEL Covenant Program and/or are protected from development through Miami-Dade County's designation as Natural Forest Communities.

(E) Map of SF 4, SF 5, SF 6, and SF 7 follows:

**Figure 3 to Family Hymenophyllaceae: *Trichomanes punctatum* ssp. *floridanum* (Florida bristle fern) paragraph (b)(1)(vii)(E)**

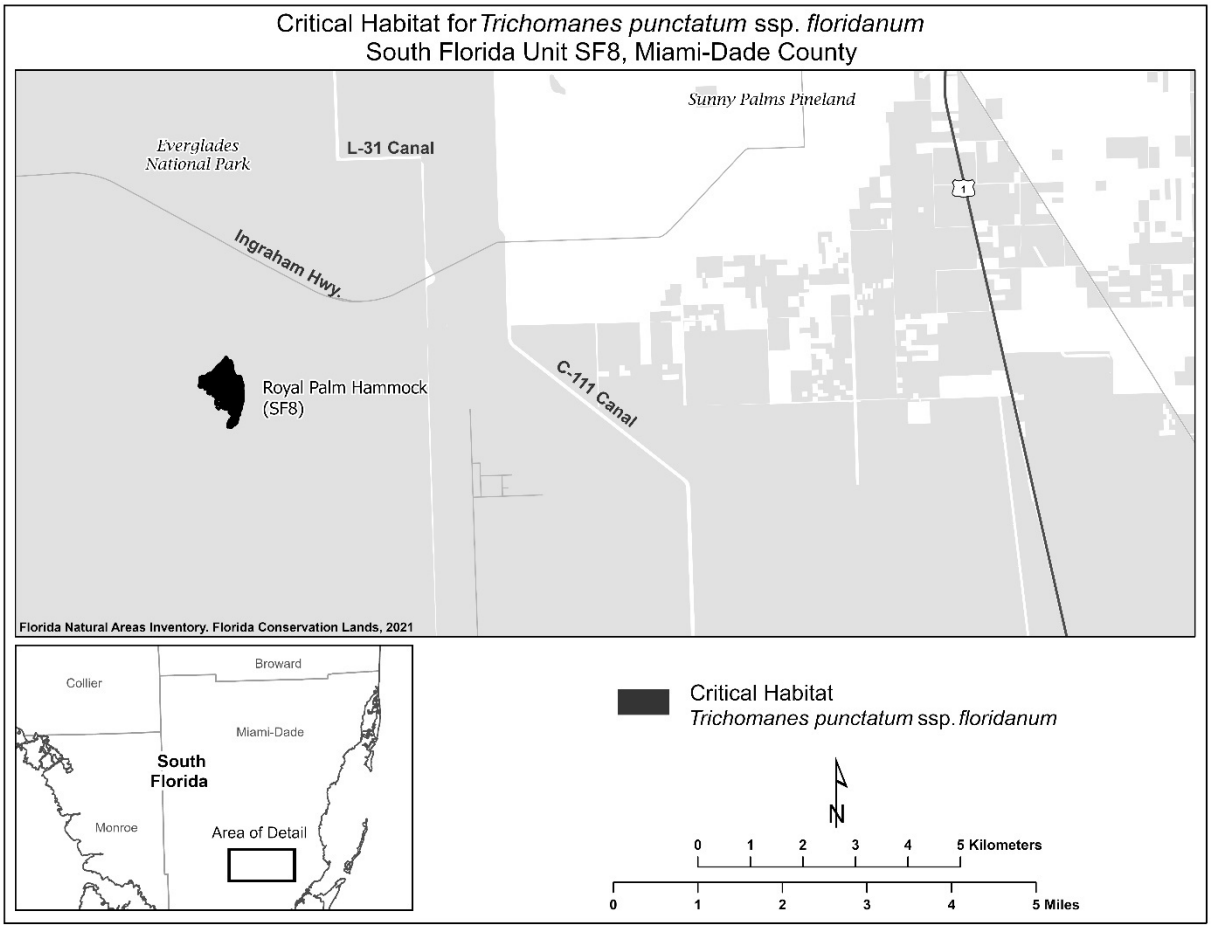



(viii) SF 8—Royal Palm Hammock, Miami-Dade County, Florida.

(A) SF 8 consists of approximately 61 ha (150 ac) in Royal Palm Hammock in Everglades National Park.

(B) Map of SF 8 follows:

**Figure 4 to Family Hymenophyllaceae: *Trichomanes punctatum* ssp. *floridanum* (Florida bristle fern) paragraph (b)(1)(viii)(B)**



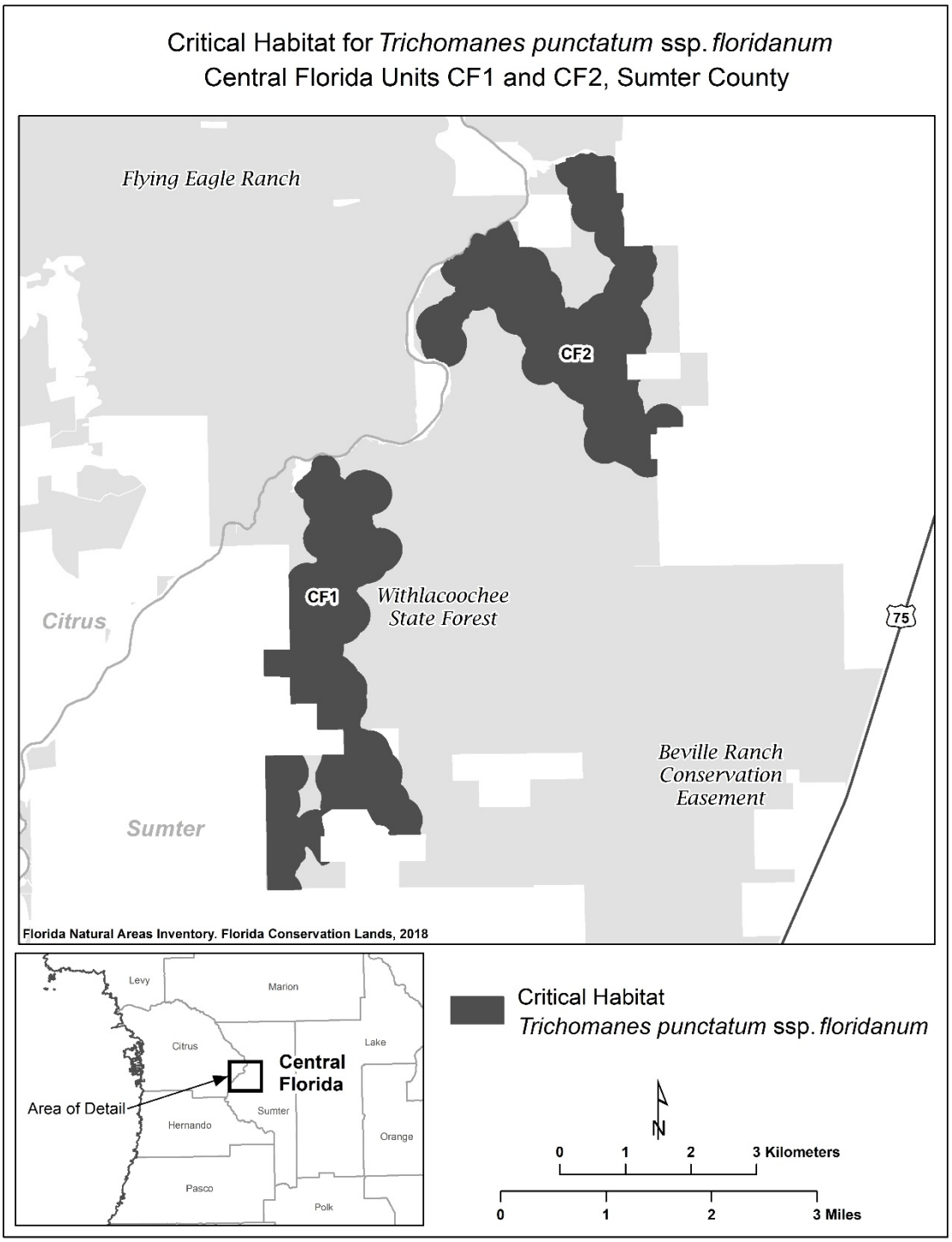

(ix) CF 1 and CF 2, Sumter County, Florida.

(A) CF 1 consists of approximately 742 ha (1,834 ac) of State-owned land (726 ha (1,795 ac)) within the Jumper Creek Tract of the Withlacoochee State Forest and of privately owned land (16 ha (39 ac)) directly adjacent to Withlacoochee State Forest. The State-owned land is managed by the Florida Forest Service.

(B) CF 2 consists of approximately 747 ha (1,846 ac) of State-owned land within the Jumper Creek Tract of the Withlacoochee State Forest.

(C) Map of CF 1 and CF 2 follows:

**Figure 5 to Family Hymenophyllaceae: *Trichomanes punctatum* ssp. *floridanum* (Florida bristle fern) paragraph (b)(1)(ix)(C)**


Critical Habitat for Trichomanes punctatum ssp. floridanum
Central Florida Units CF1 and CF2, Sumter County
Flying Eagle Ranch
CF2
CF1
Withlacoochee State Forest
Citrus
Sumter
75
Beville Ranch Conservation Easement
Florida Natural Areas Inventory. Florida Conservation Lands, 2018
Levy
Marion
Citrus
Lake
Central Florida
Area of Detail
Sumter
Hernando
Orange
Pasco
Polk
Critical Habitat
Trichomanes punctatum ssp. floridanum
N
0 1 2 3 Kilometers
0 1 2 3 Miles

(2) [Reserved]

**Martha Williams,**
*Director,*
*U.S. Fish and Wildlife Service*.

[FR Doc. 2022-27089 Filed: 12/21/2022 8:45 am; Publication Date: 12/22/2022]